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A LIST OF THE MAMMALS OF THE PHILIPPINE ISLANDS,  
EXCLUSIVE OF THE CETACEA.

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INTRODUCTION.

This list is based almost wholly on the published literature of the subject. Although the large collection of Philippine mammals in the United States National Museum has been of constant service, there has been no attempt at monographic or revisionary work on the specimens themselves. The list was first planned by Mr. Dean C. Worcester, who requested Mr. Gerrit S. Miller, curator of mammals, United States National Museum, to carry it out. Owing to more pressing work, it was impossible for Mr. Miller to take it up at present, and it was turned over to me. As the work progressed it seemed important to add several features not primarily planned, and as completed it forms several distinct parts.

The work is intended chiefly as a stimulus and help to collect-

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ors and travelers in the Islands, that they may be able to collect intelligently and to know the important species to be sought for or saved in certain localities. Doubtless hundreds of valuable specimens are annually lost to science through a lack of proper appreciation of the immense value of certain specimens from many localities. This is especially true of the larger mammals, the skulls alone of which, carefully labeled as to locality, are often of the greatest importance, and might be readily saved by sportsmen, even though it were impossible at the time to preserve the skins.

The key to the families is purely artificial, and is based on Philippine species only. Easily discerned characters, chiefly external, or at least conspicuous in freshly-killed examples, are used whenever possible. It has been the chief aim to avoid technicalities as much as possible without destroying the working value of the key, that it may be serviceable to sportsmen and travelers, without special study of mammalian structure. The key refers to the pages in the list proper where the genera and species of the family are listed; and under each genus is given a brief synopsis of characters common to all the Philippine species. To make them more serviceable, by the use of the most conspicuous characters, these generic diagnoses, like the key itself, are based solely on Philippine species and are not intended for use outside the Islands. Many characters used will fail in species from other regions. The list proper is supposed to contain all the species described from or reported from the Islands, with a reference to the original description, the present generic combination, and all synonyms with type-localities in the Philippines. After this, is given the type-locality of the recognized form and a list of the islands from which it has been recorded in literature, with an authority for each record. After the list proper is a "Hypothetical list" of species apparently erroneously reported from the Islands by Casto de Elera, a list of type-localities in the Philippines, and a bibliography of papers dealing with Philippine mammalogy.

The time has not yet come to write more than a preliminary list of Philippine mammal names; and not until a thorough survey of the Islands is made, topotypes of all described forms assembled, and general collecting carried on in all localities, will it be possible to prepare a real manual of Philippine mammals.

U. S. NATIONAL MUSEUM, *July 1, 1911.*

## LIST OF PHILIPPINE MAMMALS.

*Artificial key to the families of Philippine mammals.*

- Posterior limbs absent (dugong) ..... Dugongidæ, p. 45.  
 Posterior limbs present.  
   Toes furnished with hoofs.  
     Both sexes without horns.  
       Upper incisors present (pigs)..... Suidæ, p. 38.  
       Upper incisors wanting (mouse-deer) ..... Tragulidæ, p. 39.  
     Males with horns.  
       Solid bony horns (antlers) in male only (deer) ..... Cervidæ, p. 40.  
       Hollow horns in both sexes (caribao) ..... Bovidæ, p. 45.  
 Toes furnished with claws or nails.  
   Upper parts covered with scales; teeth absent (pangolin).  
     Manidæ, p. 35.  
 Upper parts without scales; teeth present.  
   Fore and hind limbs connected by a membrane for flying or "sailing."  
     Fingers not greatly elongated for support of flight membrane  
       (parachute).  
       Feet webbed to nails (flying-lemur) ..... Galeopteridæ, p. 7.  
       Feet not webbed (flying-squirrels)..... Petauristidæ, p. 25.  
     Fingers greatly elongated for support of flight membrane (true  
       wing).  
       Index finger with three phalanges (fruit-bats).. Pteropidæ, p. 7.  
       Index finger with less than three phalanges (bats).  
       Upper incisors absent ..... Megadermidæ, p. 13.  
       Upper incisors present.  
         Tail not contained entirely within interfemoral membrane.  
           Tail extending beyond posterior end of the interfemoral  
             membrane ..... Molossidæ, p. 20.  
           Tail perforating upper surface of interfemoral mem-  
             brane ..... Emballonuridæ, p. 12.  
         Tail contained entirely within interfemoral membrane.  
           Ear with tragus ..... Vespertilionidæ, p. 16.  
           Ear without tragus.  
             Toes with two phalanges each ..... Hipposideridæ, p. 15.  
             Toes (except hallux) with three phalanges each.  
               Rhinolophidæ, p. 13.  
     Fore and hind limbs not connected by a membrane for flying or  
       "sailing."  
       Front teeth chisel-shaped, separated from grinding teeth by a wide  
       space (no canine teeth; gnawing animals).  
       Back furnished with long quills (porcupine).... Hystricidæ, p. 34.  
       Back without quills.  
         With four or more grinding teeth in each jaw (squirrels).  
           Sciuridæ, p. 24.  
         With two or three grinding teeth in each jaw (rats, etc.).  
           Muridæ, p. 26.

Front teeth not chisel-shaped, tooth row essentially continuous (canine teeth present).

Size small; length of head and body (to root of tail) less than 215 millimeters (8.5 inches).

Total length (nose to end of tail) under 250 millimeters (or 10 inches).

Fur short; color uniform unmixed brownish—or blackish-gray (true shrews) ..... Soricidæ, p. 5.

Fur long; color variegated; slate gray mixed with reddish-brown ..... Erinaceidæ, p. 4.

Total length (nose to end of tail) over 250 millimeters (or 10 inches).

Tail well haired (tree shrews) ..... Tupaiidæ, p. 6.

Tail nearly naked (tarsier) ..... Tarsiidæ, p. 36.

Size large; length of head and body (to root of tail) over 215 millimeters (or 8.5 inches).

Upper incisors four.

No external tail.

Size small; head and body less than 300 millimeters (or 1 foot) (slow lemur) ..... Lemuridæ, p. 35.

Size large; head and body over 400 millimeters (or 16 inches) (gibbon) ..... Hylobatidæ, p. 38.

With external tail, very short or very long (macaque).  
Cercopithecidæ, p. 36.

Upper incisors six.

Hind foot with four toes (cats) ..... Felidæ, p. 23.

Hind foot with five toes.

Upper molar-premolar row (all teeth back of the long canine tooth) of six teeth (civets and mongoose) ..... Viverridæ, p. 22.

Upper molar-premolar row of less than six teeth.

Upper molar-premolar row of four teeth (otter, "skunk," etc.) ..... Mustelidæ, p. 20.

Upper molar-premolar row of five teeth.

Ears tufted; throat and breast blackish (binturong or bear-cat) ..... Viverridæ, p. 22.

Ears not tufted; throat and breast yellowish (marten) ..... Mustelidæ, p. 20.

## Order INSECTIVORA.

### Family ERINACEIDÆ.

Genus *PODOGYMNURA* Mearns.

1905. *Podogymnura* MEARNS, Proc. U. S. Nat. Mus., 28, 436.

Type.—*Podogymnura truei* MEARNS.

A small, rat-like wood-shrew; pelage long, full, and soft. Upper parts slate-gray mixed with coarse reddish-brown hairs; under parts, hoary, slightly mixed with brown hairs. Head and body, 148 millimeters; tail, 62; hind foot, 36. Only one specimen known.



*Podogymnura truei* Mearns.

1905. *Podogymnura truei* MEARNs, Proc. U. S. Nat. Mus., 28, 437.

*Type locality*.—Mount Apo, Mindanao; 1,829 meters. Mindanao (Mearns).

### Family SORICIDÆ.

Genus *PACHYURA* Sélys-Longchamps.

1839. *Pachyura* SÉLYS-LONGCHAMPS, Études de micro-mammalogie, 32.

*Type*.—*Crociodura etrusca* BONAPARTE (= *Sorex etruscus* SAVI).

Mouse-like shrews, with short, uniformly colored brownish-gray coat. Four small conical teeth behind each anterior upper incisor. Length of head and body, in Philippine species, over 110 millimeters.

*Pachyura edwardsiana* (Trouessart).

1880. *Crociodura edwardsiana* TROUESSART, Le Naturaliste, No. 42, 330, December 15.

*Type locality*.—Sulu. Sulu (Trouessart).

*Pachyura luzoniensis* (Peters).

1871. *Crociodura* (P.) *luzoniensis* PETERS, Monatsb. Königl. Preuss. Akad. Wiss. Berlin (1870), 595.

*Type locality*.—Luzon. Cebu (Günther); Luzon (Peters).

Genus *CROCIDURA* Wagler.

1832. *Crociodura* WAGLER, Isis von Oken, 275. *Type*.—*Sorex leucodon* HERMANN.

Small mouse-like shrews; usually darker colored than *Pachyura*, dark brownish-black. Three small conical teeth behind each anterior upper incisor. Length of head and body less than 100 millimeters.

*Crociodura beatus* Miller.

1910. *Crociodura beatus* MILLER, Proc. U. S. Nat. Mus., 38, 392, August 19.

*Type locality*.—Mount Bliss, Mindanao; 1,753 meters. Mindanao (Miller).

*Crociodura grandis* Miller.

1910. *Crociodura grandis* MILLER, Proc. U. S. Nat. Mus., 38, 393, August 19.

*Type locality*.—Grand Malindang Mountain, Mindanao; 1,753 meters. Mindanao (Miller).

*Crociodura grayi* Dobson.

1890. *Crociodura grayi* DOBSON, Ann. and Mag. Nat. Hist., VI, 6, 494.

*Type locality*.—Philippine Islands. Luzon (Miller).

*Crocidura halconus* Miller.

1910. *Crocidura halconus* MILLER, Proc. U. S. Nat. Mus., 38, 391, August 19.

*Type locality*.—Mount Halcon, Mindoro; 1,920 meters. Mindoro (Miller).

*Crocidura mindorus* Miller.

1910. *Crocidura mindorus* MILLER, Proc. U. S. Nat. Mus., 38, 392, August 19.

*Type locality*.—Mount Halcon, Mindoro; 1,920 meters. Mindoro (Miller).

## Family TUPAIIDÆ.

## Genus TUPAIA Raffles.

1822. *Tupaia* RAFFLES, Trans. Linn. Soc. London, 13, pt. 1, 256.

*Type*.—*Tupaia ferruginea* RAFFLES.

Tree-shrews with general appearance of small squirrels, but muzzle without whiskers; tail long-haired and flattened; head pointed; ears rounded. Coloration variegated reddish, grayish, or buffy. Head and body about 155 millimeters; tail about 166.

*Tupaia cuyonis* Miller.

1910. *Tupaia cuyonis* MILLER, Proc. U. S. Nat. Mus., 38, 693, August 19.

*Type locality*.—Cuyo. Cuyo (Miller).

*Tupaia ferruginea palawanensis* Thomas.

1894. *Tupaia ferruginea palawanensis* THOMAS, Ann. and Mag. Nat. Hist., VI, 13, 367.

*Type locality*.—Palawan. Palawan (Thomas).

*Tupaia möllendorffi* Matschie.

1898. *Tupaia möllendorffi* MATSCHIE, Sitz.-ber. Ges. Nat. Freunde Berlin (1898), No. 5, 39, May.

*Type locality*.—Culion. Culion (Matschie).

## Genus UROGALE Mearns.

1905. *Urogale* MEARNS, Proc. U. S. Nat. Mus. 28, 435. *Type*.—*Urogale cylindrura* MEARNS.

Like *Tupaia* but larger, with tail short-haired and more cylindrical. Colors dark brown, usually with an indistinct ferruginous stripe over each shoulder. Head and body about 200 millimeters; tail about 100.

*Urogale cylindrura* Mearns.1905. *Urogale cylindrura* MEARNs, Proc. U. S. Nat. Mus., 28, 435.*Type locality*.—Village of Todaya, Mount Apo, Mindanao; 1,219 meters. Mindanao (Mearns).*Urogale everetti* (Thomas).1892. *Tupaia everetti* THOMAS, Ann. and Mag. Nat. Hist. VI, 9, 250, March.1905. *Urogale everetti* MEARNs, Proc. U. S. Nat. Mus., 28, 435.*Type locality*.—Zamboanga, Mindanao. Mindanao (Thomas).

## Order DERMOPTERA.

## Family GALEOPTERIDÆ.

Genus *CYNOCEPHALUS* Boddaërt.1768. *Cynocephalus* BODDÆRT, Dierk. Meng., 2, 8, footnote 1. *Type*.—*Cynocephalus volans*=*Lemur volans* LINNÆUS.*"Flying-lemur."* Fore and hind limbs and tail connected by a broad expansion of skin forming a parachute; feet fully webbed. Colors marbled gray and brown. Size of a small domestic cat; head and body about 400 millimeters.*Cynocephalus volans* (Linnæus).1758. *Lemur volans* LINNÆUS, Syst. Nat., 10 ed., 1, 30.1768. *Cynocephalus volans* BODDÆRT, Dierk. Meng., 2, 8, footnote 1.1838. *Galeopithecus philippinensis* WATERHOUSE, Proc. Zool. Soc. London, 119. (South of Manila, Luzon.)*Type locality*.—Pampanga, southern Luzon [see Thomas, Proc. Zool. Soc. London (1911), 130]. Basilan (Steere); Bohol (Thomas); Dinagat (Günther); Leyte (Thomas); Mindanao (Steere); Samar (Thomas).

## Order CHIROPTERA.

## Family PTEROPIDÆ.

Genus *CYNOPTERUS* F. Cuvier.1825. *Cynopterus* F. CUVIER, Des Dents des Mammifères, 248. *Type*.—*Pteropus marginatus* GEOFFROY.

Rather small fruit-bats with very short tails, the terminal half free from interfemoral membrane; second finger with well developed claw; nostrils prominent, almost tubular; upper lip divided by a deep, narrow, vertical groove. Color variable. Head and body about 110 millimeters.

*Cynopterus luzoniensis* (Peters).

1862. *Pachysoma luzoniense* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 708.

1870. *Cynopterus marginatus* var. *philippensis* GRAY, Cat. Monk., Lemurs, and Fruit-eat. Bats, 123. (Philippines.)

1870. *Cynopterus marginatus* var. *cumingii* GRAY, Cat. Monk., Lemurs, and Fruit-eat. Bats, 123. (Philippines.)

1899. *Cynopterus luzoniensis* MATSCHIE, Megachiroptera des Berliner Mus., 76.

*Type locality*.—East slope of Volcano Yriga, Camarines, Luzon. Luzon (Peters).

## Genus THOOPTERUS Matschie.

1899. *Thoopterus* MATSCHIE, Flederm. des Berliner Mus. für Naturk., 77. *Type*.—*Cynopterus marginatus* var. *nigrescens* GRAY.

Like *Cynopterus*, but with cheek teeth greatly enlarged, the crowns almost square; tail shorter, concealed in the fur. General color dark brown.

*Thoopterus nigrescens* (Gray).

1870. *Cynopterus marginatus* var. *nigrescens* GRAY, Cat. Monk., Lemurs, and Fruit-eat. Bats, 123.

1878. *Cynopterus latidens* DOBSON, Cat. Chiropt., 86.

1895. *Cynopterus latidens* ELERA, Cat. Syst. Faun. Filipinas, 1, 7.

1907. *Thoopterus nigrescens* MILLER, Bull. U. S. Nat. Mus., No. 57, 50.

*Type locality*.—Morty Island, Malay Archipelago. Luzon (Elera).

## Genus PTENOCHIRUS Peters.

1862. *Ptenochirus* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 707. *Type*.—*Pachysoma (Ptenochirus) jagorii* PETERS.

Like *Cynopterus*, but with inner pair of lower incisors absent (incisors 4/2); outer upper incisors shorter than middle ones. Color above dark brown, below paler. Head and body, 103 millimeters.

*Ptenochirus jagorii* (Peters).

1862. *Pachysoma (Ptenochirus) jagorii* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 707.

1899. *Ptenochirus jagori* MATSCHIE, Megachiroptera des Berliner Mus., 79.

*Type locality*.—Daraga, Albay, Luzon. Luzon (Peters); Mindanao (Trouessart); Mindoro (Trouessart).

## Genus ROUSETTUS Gray.

1821. *Rousettus* GRAY, London Med. Rep., 15, 299, April 1. *Type*.—*Pteropus aegyptiacus* GEOFFROY.

Medium sized fruit-bats (Philippine species, head and body about 127 millimeters). Muzzle long; second finger with well

developed claw; tail about 16 millimeters long. Color varying from dark brown to yellowish-brown.

*Rousettus amplexicaudatus* (Geoffroy).

1810. *Pteropus amplexicaudatus* GEOFFROY, Ann. Mus. d'Hist. Nat. 15, 96.

1870. *Eleutherura philippinensis* GRAY, Cat. Monk., Lemurs, and Fruit-eat. Bats, 119. (Manila, Luzon.)

1904. *Rousettus amplexicaudatus* TROUESSART, Cat. Mamm., Suppl., 60.

*Type locality*.—Timor Island. Guimarás (Steere); Luzon (Thomas); Negros (Elliot); Samar (Peters).

Genus *PTEROPUS* Brisson.

1762. *Pteropus* BRISSON, Regn. Anim., 2 ed., 13. *Type*.—*Vespertilio vampyrus* LINNÆUS.

Large fruit-bats (one species the largest bat known). Tail absent; interfemoral membrane narrow; calcar well developed; well developed claw on index finger. Fur of nape of neck and shoulders differing in color or quality from that of back.

*Pteropus cagayanus* Mearns.

1905. *Pteropus cagayanus* MEARNs, Proc. U. S. Nat. Mus., 28, 433.

*Type locality*.—Cagayan Sulu. Cagayan Sulu (Mearns).

*Pteropus hypomelanus hypomelanus* Temminck.

1853. *Pteropus hypomelanus* TEMMINCK, Esquiss. Zool. sur la Côte de Guinée, 61.

*Type locality*.—Ternate. Dinagat (Günther); Guimarás (Elliot); Leyte (Steere); Mindanao (Günther); Panay (Steere).

*Pteropus leucopterus* Temminck.

1853. *Pteropus leucopterus* TEMMINCK, Esquiss. Zool. sur la Côte de Guinée, 60.

1870. *Pteropus chinensis* GRAY, Cat. Monk., Lemurs, and Fruit-eat. Bats, 111. [Probably Luzon, see Andersen, Ann. and Mag. Nat. Hist. (1909), VIII, 3, 213, footnote.]

*Type locality*.—Philippine Islands. Cagayan (Elera); Luzon (Andersen).

*Pteropus pumilus* Miller.

1910. *Pteropus pumilus* MILLER, Proc. U. S. Nat. Mus., 38, 394, August 19.

*Type locality*.—Palmas Island, southeast of Mindanao. Palmas (Miller).

*Pteropus speciosus* Andersen.

1908. *Pteropus speciosus* ANDERSEN, Ann. and Mag. Nat. Hist., VIII, 2, 364, October.

*Type locality*.—Malanipa Island, off Zamboanga. Malanipa (Andersen); Sibutu (Andersen).

*Pteropus vampyrus lanensis* Mearns.1905. *Pteropus lanensis* MEARNS, Proc. U. S. Nat. Mus., 23, 432.1908. *Pteropus vampyrus lanensis* ANDERSEN, Ann. and Mag. Nat. Hist., VIII, 2, 368, October.

*Type locality*.—Pantar, near Lake Lanao, Mindanao; 581 meters. Catanduanes (Thomas); Cebu (Elera); Dinagat (Günther); Leyte (Elliot); Luzon (Matschie); Mindanao (Mearns); Negros (Steere); Palawan (U. S. N. M.); Panay (Steere); Rasal (Günther); Samar (Peters).

Genus *ACERODON* Jourdan.1837. *Acerodon* JOURDAN, L'Echo du Monde Savant et l'Hermès, 4, No. 275, 156, October 14. *Type*.—*Pteropus jubatus* ESCHSCHOLTZ.

Large fruit-bats; like *Pteropus*, but with smaller canines and larger, more complex molariform teeth. Middle pair of lower incisors much smaller than the outer incisors. Forearm from 165 to 205 millimeters.

*Acerodon jubatus jubatus* (Eschscholtz).1831. *Pteropus jubatus* ESCHSCHOLTZ, Zool. Atlas, 4, 1, pl. 16.1833. *Pteropus pyrrhocephalus* MEYEN, N. Act. Acad. Cæs. Leop.-Car., 16, pt. 2, 604, pls. 45-46. (Manila, Luzon.)1896. *Pteropus auri-nuchalis* ELLIOT, Field Col. Mus. Pub. Zool., 1, No. 3, 77, May. (Leyte.)1896. *Acerodon jubatus* HEUDE, Mém. Hist. Nat. Emp. Chinois, 3, 177.

*Type locality*.—Manila, Luzon. Dinagat (Andersen); Leyte (Andersen); Luzon (Andersen); Negros (Andersen); Panay (Elliot).

*Acerodon jubatus mindanensis* Andersen.1909. *Acerodon jubatus mindanensis* ANDERSEN, Ann. and Mag. Nat. Hist., VIII, 3, 26.

*Type locality*.—Mindanao. Mindanao (Andersen).

*Acerodon lucifer* (Elliot).1896. *Pteropus lucifer* ELLIOT, Field Col. Mus. Pub. Zool., 1, No. 3, 78, May.1909. *Acerodon lucifer* ANDERSEN, Ann. and Mag. Nat. Hist., VIII, 3, 24, January.

*Type locality*.—Concepcion, Panay. Panay (Elliot).

Genus *HYPODERMIS* Blythe.1823. *Hypoderma* GEOFFROY, Dict. Class. Hist. Nat., 14, 706, (not *Hypoderma* LATREILLE, 1825).1840. *Hypodermis* BLYTHE, Cuvier's Anim. Kingd., 69. *Type*.—*Cephalotes peronii* GEOFFROY.1898. *Dobsonia* PALMER, Proc. Biol. Soc. Wash., 12, 114, April 30.

Medium sized fruit-bats. No claw on index finger; tail well developed; two upper and two lower incisors only. Head and



shoulders well clothed with blackish fur; posterior half of body nearly naked. Head and body about 165 millimeters.

*Hypodermis peronii* (Geoffroy).

1810. *Cephalotes peronii* GEOFFROY, Ann. Mus. d'Hist. Nat. 15, 104.

*Type locality*.—Timor Island. Samar (Trouessart).

Genus *MACROGLOSSUS* Schinz.

1824. *Macroglossus* SCHINZ, Naturgesch. und Abbild. Säugeth., 71.

*Type*.—*Pteropus rostratus* HORSFIELD=*Macroglossus minimus* (GEOFFROY).

Small reddish-brown fruit-bats; body entirely furred; well developed claw on index finger; no external tail. Head and body less than 100 millimeters.

*Macroglossus lagochilus* Matschie.

1899. *Macroglossus lagochilus* MATSCHIE, Megachiroptera des Berliner Mus., 97.

*Type locality*.—Buru. Cuyo (Elera); Negros (Thomas); Panay (Elera); Samar (Elera); Tablas (Matschie).

Genus *ODONTONYCTERIS* Jentink.

1902. *Odontonycteris* JENTINK, Notes from Leyden Mus., 23, No. 3, 140, July 15. *Type*.—*Odontonycteris meyeri* JENTINK.

Like *Macroglossus* in external characters, but upper and lower molar-premolar rows of six teeth (an additional upper molar over *Macroglossus*).

*Odontonycteris meyeri* Jentink.

1902. *Odontonycteris meyeri* JENTINK, Notes from Leyden Mus., 23, No. 3, 140, July 15.

*Type locality*.—Great Sangi Island. Cagayan Sulu (Miller).

Genus *HARPYIONYCTERIS* Thomas.

1896. *Harpyionycteris* THOMAS, Ann. and Mag. Nat. Hist., VI, 18, 243, September. *Type*.—*Harpyionycteris whiteheadi* THOMAS.

Medium sized fruit-bats (head and body 140 millimeters). No tail; claw on index finger present; legs unusually short. General color above and below uniform chocolate-brown. Only one specimen known.

*Harpyionycteris whiteheadi* Thomas.

1896. *Harpyionycteris whiteheadi* THOMAS, Ann. and Mag. Nat. Hist., VI, 18, 244, September.

*Type locality*.—Mindoro. Mindoro (Thomas).

## Family EMBALLONURIDÆ.

## Genus EMBALLONURA Temminck.

1838. *Emballonura* TEMMINCK, Van der Hoven's Tijdschrift Nat. Gesch. en Physiol., 5, 22. Type.—*Emballonura monticola* TEMMINCK.

Small insectivorous bats; proximal phalanx of third finger flexed on dorsal surface of metacarpal when at rest; muzzle without special cutaneous outgrowths; tragus present; eyes large, rather prominent. Tail perforates the interfemoral membrane and appears on its upper surface distinctly back from edge. Upper incisors four. Head and body about 38 millimeters.

*Emballonura monticola* Temminck.

1838. *Emballonura monticola* TEMMINCK, Van der Hoven's Tijdschrift Nat. Gesch. en Physiol., 5, 25.

1839. *Vespertilio* (*Nycticeus*) *alecto* EYDOUX AND GERVAIS, Voyage autour du Monde, 5, pt. 2, 7. (Manila, Luzon.)

1862. *Emballonura discolor* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 711. (Paracali, Luzon.)

Type locality.—Java. Luzon (Dobson).

## Genus TAPHOZOUS Geoffroy.

1813. *Taphozous* GEOFFROY, Descr. de l'Égypte, 2, 113. Type.—*Taphozous perforatus* GEOFFROY.

Philippine species larger than *Emballonura*, with short muzzle, deep hollow between eyes, and tail perforating interfemoral membrane, free for at least 10 millimeters. Colors brown or black, frequently marbled with lighter. Upper incisors two. Proximal phalanx of third finger flexed on dorsal surface of metacarpal when at rest, as in *Emballonura*.

*Taphozous philippinensis* Waterhouse.

1845. *Taphozous philippinensis* WATERHOUSE, Proc. Zool. Soc. London, Jan. 14, (1845), 9, April.

Type locality.—Philippine Islands. Luzon (Matschie); Mindanao (Hoffman).

*Taphozous pluto* Miller.

1910. *Taphozous pluto* MILLER, Proc. U. S. Nat. Mus., 38, 396, August 19.

Type locality.—Mercedes, 15 kilometers east of Zamboanga, Mindanao. Mindanao (Miller); Luzon (Miller).

## Family MEGADERMIDÆ.

## Genus MEGADERMA Geoffroy.

1810. *Megaderma* GEOFFROY, Ann. Mus. d'Hist. Nat., 15, 187. *Type*.—*Vespertilio spasma* LINNÆUS.

Bats with long, erect nose-leaf, very short tails, and large ears with bifid tragus; no upper incisor teeth. Color brownish-gray or slaty. Head and body about 87 millimeters.

*Megaderma spasma spasma* (Linnæus).

1758. *Vespertilio spasma* LINNÆUS, Syst. Nat. 10 ed., 1, 32.  
 1810. *Megaderma spasma* GEOFFROY, Ann. Mus. d'Hist. Nat., 15, 195.  
 1843. *Megaderma philippinensis* WATERHOUSE, Proc. Zool. Soc. London, 69. (Philippine Islands.)

*Type locality*.—Ternate [See Andersen and Wroughton, *Ann. and Mag. Nat. Hist.* (1907), VII, 19, 132]. Luzon (Sanchez); Mindanao (Dobson).

## Family RHINOLOPHIDÆ.

## Genus RHINOLOPHUS Lacépède.

1799. *Rhinolophus* LACÉPÈDE, Tabl. des Div. Sousdiv. Ordres et Genres Mamm., 15. *Type*.—*Vespertilio ferrum-equinum* SCHREBER.

Small bats with conspicuous nose-leaves; large ears without tragus. Tail well developed, contained entirely within the inter-femoral membrane.

*Rhinolophus anderseni* Cabrera.

1909. *Rhinolophus anderseni* CABRERA, Bol. de la Real Soc. Española de Hist. Nat., 305 (306 in separate), June.

*Type locality*.—Philippines, probably Luzon. (?) Luzon (Cabrera).

*Rhinolophus virgo* Andersen.

1905. *Rhinolophus virgo* ANDERSEN, Proc. Zool. Soc. London, May 16, (1905), 88, October.

*Type locality*.—South Camarines, Luzon. Luzon (Andersen).

*Rhinolophus philippinensis* Waterhouse.

1843. *Rhinolophus philippinensis* WATERHOUSE, Proc. Zool. Soc. London, 68.

*Type locality*.—Luzon [see Anderson, *Ann. and Mag. Nat. Hist.* (1905), 16, 254]. Luzon (Peters); Mindanao (Hoffman).

*Rhinolophus luctus* Temminck.

1841. *Rhinolophus luctus* TEMMINCK, Monog. des Mamm., 2, 24.

*Type locality*.—Tapos, Java. Palawan (Elera).

Recorded by Elera from various islands in the Philippine group. Andersen, *Ann. and Mag. Nat. Hist.* (1905), VII, 16, 252, says that he has seen no bats of the *luctus* style from the Philippines. As this form is found in Borneo, Elera's record from Palawan seems worth retaining for the present.

*Rhinolophus rufus* Eydoux and Gervais.

1839. *Rhinolophus luctus* varietas *rufa* EYDOUX AND GERVAIS, Voyage autour du Monde, 5, pt. 2, 9.

1870. *Aquias eudouxii* FITZINGER, Sitz.-ber. Akad. Wien, 61, 194, February. (New name for *Rh. luctus rufus* EYDOUX AND GERVAIS.)

*Type locality*.—Manila, Luzon. Luzon (Eydoux and Gervais).

Usually placed in the synonymy of *R. luctus*. Andersen, *Ann. and Mag. Nat. Hist.* (1905), 16, 252, says that it is possibly an earlier name for *R. philippinensis*, and he has seen no bats of the *luctus* style from the Philippines. Until more *Rhinolophi* from Luzon are examined, it seems best to retain it in the list.

*Rhinolophus hirsutus* Andersen.

1905. *Rhinolophus hirsutus* ANDERSEN, *Ann. and Mag. Nat. Hist.* VII, 16, 289, September.

*Type locality*.—Guimarás Island, P. I. Guimarás (Andersen).

*Rhinolophus arcuatus arcuatus* Peters.

1872. *Rhinolophus arcuatus* PETERS, Monatsb. Königl. Preuss. Akad., June, (1871), 305.

*Type locality*.—Luzon. Luzon (Andersen).

*Rhinolophus arcuatus exiguus* Andersen.

1905. *Rhinolophus arcuatus exiguus* ANDERSEN, *Ann. and Mag. Nat. Hist.*, VII, 16, 283, September.

*Type locality*.—Zamboanga, Mindanao. Guimarás (Andersen); Mindanao (Andersen).

*Rhinolophus subrufus* Andersen.

1862. *Rhinolophus rufus* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 710. (Paracali, Luzon.) Not *Rhinolophus luctus* varietas *rufa* EYDOUX AND GERVAIS 1839.

1905. *Rhinolophus subrufus* ANDERSEN, *Ann. and Mag. Nat. Hist.*, VII, 16, 283, September.

*Type locality*.—Manila, Luzon. Luzon (Andersen); Mindanao (Andersen); Tablas (Matschie).

*Rhinolophus inops* Andersen.

1905. *Rhinolophus inops* ANDERSEN, Ann. and Mag. Nat. Hist., VII, 16, 284, September.

*Type locality*.—Mount Apo, at Todaya, Mindanao; 1,219 meters. Mindanao (Andersen).

### Family HIPPOSIDERIDÆ.

#### Genus HIPPOSIDEROS Gray.

1831. *Hipposideros* GRAY, Zool. Misc., 37. *Type*.—*Vespertilio speoris* SCHREBER.

Small bats, with well developed tail and ears; resembling *Rhinolophus*, but toes with two phalanges each and lower molar-premolar series of five teeth, instead of six as in *Rhinolophus* (third lower premolar absent).

*Hipposideros antricola* (Peters).

1862. *Phyllorhina antricola* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 709.

1898. *Hipposideros antricola* MATSCHIE, Sitz.-ber. Ges. Nat. Freunde Berlin, No. 5, 39, May.

*Type locality*.—Paracali, Luzon. Luzon, (Matschie).

*Hipposideros bicolor* (Temminck).

1841. *Rhinolophus bicolor* TEMMINCK, Monog. des Mamm., 2, 18.

1904. *Hipposiderus bicolor* TROUESSART, Cat. Mamm., Suppl., 72.

*Type locality*.—Java, Amboina, and Timor. Luzon (Peters); Palawan (Elera).

*Hipposideros coronatus* (Peters).

1872. *Phyllorhina coronata* PETERS, Monatsb. Königl. Preuss. Akad., June, (1871), 327.

1904. *Hipposiderus coronata* TROUESSART, Cat. Mamm., Suppl., 72.

*Type locality*.—Mainit, Mindanao. Mindanao (Peters); Palawan (Elera); Samar (Elera).

*Hipposideros diadema griseus* (Meyen).

1833. *Rhinolophus griseus* MEYEN, Nov. Act. Ac. Cæs. Leop.-car., 16, pt. 2, 608, pl. 46.

1905. *Hipposiderus diadema griseus* ANDERSEN, Ann. and Mag. Nat. Hist., VII, 16, 497, November.

*Type locality*.—S. Matheo Cave, Luzon [Andersen, Ann. and Mag. Nat. Hist. (1905), VII, 16, 497]. Catanduanes (Andersen); Guimarás (Andersen); Leyte (Andersen); Luzon (Andersen); Mindanao (Andersen).

**Hipposideros obscurus** (Peters).

1862. *Phyllorhina obscura* PETERS, Monatsb. Königl. Preuss. Akad. (1861), 709.

1904. *Hipposiderus obscura* TROUESSART, Cat. Mamm., Suppl., 72.

*Type locality*.—Paracali, Luzon. Dinagat (Günther); Luzon (Peters); Mindanao (Elera).

**Hipposideros pygmæus** Waterhouse.

1843. *Rhinolophus pygmæus* WATERHOUSE, Proc. Zool. Soc. London (1843), 67.

1904. *Hipposiderus pygmæa* TROUESSART, Cat. Mamm., Suppl., 71.

*Type locality*.—Philippine Islands. Luzon (Elera; specimens also in United States National Museum).

**Genus CHILOPHYLLA** Miller.

1910. *Chilophylla* MILLER, Proc. U. S. Nat. Mus. 38, 395, August 19.

*Type*.—*Chilophylla hirsuta* MILLER.

A small bat with very large, funnel-shaped ears and unusually long soft fur. Nose-leaf inconspicuous except for the two lap-pets projecting over upper lip. Tail very short. General color light brown. Head and body, 33 millimeters. Only one specimen known.

**Chilophylla hirsuta** Miller.

1910. *Chilophylla hirsuta* MILLER, Proc. U. S. Nat. Mus., 38, 395, August 19.

*Type locality*.—Alag River, opposite mouth of Egbert River, Mindoro. Mindoro (Miller).

**Family VESPERTILIONIDÆ.****Genus MYOTIS** Kaup.

1829. *Myotis* KAUP, Skizzirte Entw.-Gesch. u. Natürl. Syst. d. Europ. Thierw., 1, 106. *Type*.—*Vespertilio myotis* BECHSTEIN.

Small bats with simple muzzles and lips. Tail long; ear well developed with slender tragus. Interfemoral membrane large, its surface furred at extreme base below. Teeth, 38.

**Myotis formosus** (Hodgson).

1835. *Vespertilio formosa* HODGSON, Journ. Asiatic Soc. Bengal, 4, 700.

1845. *Vespertilio rufo-pictus* WATERHOUSE, Proc. Zool. Soc. London, Jan. 14, (1845), 3, April. (Philippine Islands.)

1904. *Myotis formosus* TROUESSART, Cat. Mamm., Suppl., 91.

*Type locality*.—Central Nipal. Luzon (Elera).



*Myotis macrotarsus* (Waterhouse).

1845. *Vespertilio macrotarsus* WATERHOUSE, Proc. Zool. Soc. London. (1845), 3, April.

1904. *Myotis macrotarsus* THOMAS, Trans. Zool. Soc. London, 14, pt. 6, 385.

*Type locality*.—Philippine Islands. Luzon (Thomas); Mindoro (Elera).

Genus *PIPISTRELLUS* Kaup.

1829. *Pipistrellus* KAUP, Skizzirte Entwick.-Gesch. u. Natürl. Syst. d. Europ. Thierw., 1, 98. *Type*.—*Vespertilio pipistrellus* SCHREBER.

Externally much as in *Myotis*; ear usually shorter and broader, and tragus less acutely pointed; teeth, 34 (38 in *Myotis*). Size small; head and body, 40 to 45 millimeters.

*Pipistrellus imbricatus* (Horsfield).

1824. *Vespertilio imbricatus* HORSFIELD, Zool. Res. in Java (pages not numbered).

1898. *Pipistrellus imbricatus* THOMAS, Trans. Zool. Soc. London, 14, pt. 6, 385.

*Type locality*.—Java. Luzon (Thomas).

*Pipistrellus irretitus* (Cantor).

1842. *Vespertilio irretitus* CANTOR, Ann. and Mag. Nat. Hist., 9, 481.

1845. *Vespertilio meyeri* WATERHOUSE, Proc. Zool. Soc. London, Jan. 14, (1845), 3, April. (Philippine Islands.)

*Type locality*.—Chusan Island, China. Luzon (Elera).

*Pipistrellus tenuis* (Temminck).

1841. *Vespertilio tenuis* TEMMINCK, Monog. des Mamm., 2, 229.

*Type locality*.—Java and Sumatra. (?) Mindanao (Hoffman).

Genus *TYLONYCTERIS* Peters.

1872. *Tylonycteris* PETERS, Monatsb. Königl. Preuss. Akad. Wiss., 703.

*Type*.—*Vespertilio pachypus* TEMMINCK.

Very small bats (head and body about 40 millimeters; tail about 25) with head greatly flattened (depth of braincase barely one-half of mastoid width); ears normal, with small tragus; color golden-brown.

*Tylonycteris pachypus* (Temminck).

1841. *Vespertilio pachypus* TEMMINCK, Monog. de Mamm., 2, 217.

1872. *Tylonycteris pachypus* PETERS, Monatsb. Königl. Preuss. Akad. Wiss., 704.

*Type locality*.—Java and Sumatra. Cebu (Elera); Luzon (Dobson); Mindanao (Hoffman); Negros (Elera).

## Genus SCOTOPHILUS Leach.

1821. *Scotophilus* LEACH, Trans. Linn. Soc. London, 13, 69. *Type*.—*Scotophilus kuhlii* LEACH.

Medium-sized bats (single Philippine species with head and body about 75 millimeters; tail about 50) varying in color from olive-brown to rich chestnut. Ears rather small with long, sharply-pointed tragus. Wing membrane attached to side of foot near base of toes. Wing and interfemoral membrane entirely naked above.

*Scotophilus temminckii* (Horsfield).

1824. *Vespertilio temminckii* HORSFIELD, Zool. Res. in Java (pages not numbered).

1838. *Scotophilus temminckii* GRAY, Mag. Zool. and Bot., 2, 497.

*Type locality*.—Java. Luzon (Peters); Negros (Elera); Panay (Elliot).

## Genus MINIOPTERUS Bonaparte.

1837. *Miniopterus* BONAPARTE, Iconogr. della Fauna Italica, 1, fasc.

- XX. *Type*.—*Vespertilio ursinii* BONAPARTE = *V. schreibersii* KUHL.

Tail as long as head and body, wholly contained within the interfemoral membrane; ears small; tragus high, slender, slightly curved forward at tip; nostrils simple. Color variable. Head and body 45 to 60 millimeters.

*Miniopterus australis* Tomes.

1858. *Miniopterus australis* TOMES, Proc. Zool. Soc. London (1858), 125.

*Type locality*.—Australia. Luzon (Peters).

*Miniopterus pusillus* Dobson.

1876. *Miniopterus pusillus* DOBSON, Monog. Asiatic Chiropt., 162.

*Type locality*.—India or Philippine Islands. Luzon (Thomas); Mindanao (Hoffman).

*Miniopterus schreibersii* (Kuhl).

1819. *Vespertilio schreibersii* KÜHL, Neue Ann. der Gesell. Wetterau., 1, pt. 2, 185.

1840. *Miniopterus schreibersii*, KEYSERLING AND BLASIUS, Wirbelth. Europ., 45.

1845. *Vespertilio eschscholtzii* WATERHOUSE, Proc. Zool. Soc. London, Jan 14, (1845), 3, April. (Philippine Islands.)

*Type locality*.—Hungary. Luzon (Peters); Samar (Sanchez).

*Miniopterus tibialis* (Tomes).

1858. *Vesp[ertilio] tibialis* TOMES, Proc. Zool. Soc. London (1858), 126.

1878. *Miniopterus tibialis* DOBSON, Cat. Chiropt. Brit. Mus., 348, in synonymy.

*Type locality*.—Amboyna. Luzon (Matschie).

*Miniopterus tristis* (Waterhouse).

1845. *Vespertilio tristis* WATERHOUSE, Proc. Zool. Soc. London (1845), 3, April.

1858. *Miniopterus tristis* TOMES, Proc. Zool. Soc. London (1858), 124.

*Type locality*.—Philippine Islands. Cebu (Elera); Luzon (Peters); Samar (Elera).

## Genus MURINA Gray.

1842. *Murina* GRAY, Ann. and Mag. Nat. Hist., 10, 258, December.

*Type*.—*Vespertilio suillus* TEMMINCK.

Ears nearly circular; tragus long, tapering to a fine point. Wing membrane attached along the whole length of outer toe to the base of claw, extreme tip of tail free; upper surface of inter-femoral membrane covered with hair. Head and body about 43 millimeters; tail about 37.

*Murina cyclotis* Dobson.

1872. *Murina cyclotis* DOBSON, Proc. Asiatic Soc. Bengal, Dec. (1872), 210.

*Type locality*.—Darjeeling, N. E. Bengal. Mindanao (Hoffman).

## Genus KERIVOULA Gray.

1842. *Kerivoula* GRAY, Ann. and Mag. Nat. Hist., 10, 258, December.

*Type*.—*Vespertilio hardwickii* HORSFIELD.

Small, delicately-formed bats; ears extending slightly beyond nostrils when laid forward, distinctly funnel-shaped, with long slender tragi; muzzle simple. Fur long and soft.

*Kerivoula hardwickii* (Horsfield).

1824. *Vespertilio hardwickii* HORSFIELD, Zool. Res. in Java, (pages not numbered).

1842. *Kerivoula hardwickii* GRAY, Ann. and Mag. Nat. Hist., 10, 258.

*Type locality*.—Java. Mindanao (Thomas); Samar (Peters).

*Kerivoula jagorii* (Peters).

1867. *Vespertilio (Kerivoula) jagorii* PETERS, Monatsb. Königl. Preuss. Akad. Wiss. Berlin (1866), 399.

1878. *Kerivoula jagorii* DOBSON, Cat. Chiropt. Brit. Mus., 338.

*Type locality*.—Samar Island. Samar (Peters).

*Kerivoula pellucida* (Waterhouse).

1845. *Vespertilio pellucidus* WATERHOUSE, Proc. Zool. Soc. London (1845), 3, April.

1876. *Kerivoula pellucida* DOBSON, Monogr. Asiatic Chiropt., 149.

*Type locality*.—Philippine Islands. Luzon (Elera); Mindanao (Elera).

*Kerivoula whiteheadi* Thomas.

1894. *Kerivoula whiteheadi* THOMAS, Ann. and Mag. Nat. Hist., VI, 14, 460.

*Type locality*.—Isabela, N. E. Luzon. Luzon (Thomas).

### Family MOLOSSIDÆ.

Genus CHÆREPHON Dobson.

1874. *Chærephon* DOBSON, Journ. Asiatic Soc. Bengal, 43, pt. 2, 144.

*Type*.—*Nyctinomus johorensis* DOBSON.

Bats with ears connected by a low band across crown; tragus very small; tail long, free from interfemoral membrane about half its length. Upper lip thick, deeply grooved by vertical wrinkles. Wing membrane from the lower end of tibia. Fur short; color dark blackish-brown above, marbled below. Head and body about 75 millimeters.

*Chærephon plicatus* (Buchannan).

1800. *Vespertilio plicatus* BUCHANNAN, Trans. Linn. Soc., 5, 261.

1907. *Chærephon plicatus* ANDERSEN, Ann. Mus. Civ. di Storia Nat. di Genova, III, 3, 87, April.

*Type locality*.—Puttahaut, Bengal. Philippine Islands (Dobson); Luzon (Elera).

## Order CARNIVORA.

### Family MUSTELIDÆ.

Genus MARTES Pinel.

1792. *Martes* PINEL, Actes Soc. Hist. Nat., Paris, 1, 55, footnote.

*Type*.—*Martes domestica* PINEL=*Martes foina* (ERXLEBEN).

Martens, the single supposed Philippine species about the size of a domestic cat; head and body of male 458 millimeters; tail, 340. Body long and slender; tail long, but less than length of body. Color somewhat variable, but ordinarily with head brown, shoulders lighter, and rump, legs, feet, and tail black; sides of neck and throat yellowish.

*Martes henricii* (Westerman).

1848. *Mustela* (*Martes*) *henricii* WESTERMAN, Bijdragen tot de Dierkunde, 1, 13.

*Type locality*.—Java. Sulu (Trouessart).

Sanchez, Los Mamíferos de Filipinas, does not allow this species a place in his list on this authority. Possibly it should be dropped from Philippine lists.

Genus *MUSTELA* Linnæus.

1758. *Mustela* LINNÆUS, Syst. Nat., 10 ed., 1, 45. *Type*.—*Mustela erminea* LINNÆUS.

Weasels, the single supposed Philippine species bright tawny, with whitish head. Fur long and coarse, tail bushy. Head and body about 365 millimeters; tail about 220.

*Mustela nudipes* Desmarest.

1822. *Mustela nudipes* DESMAREST, Mammalogie, pt. 2, 537.

*Type locality*.—Java. Calamianes (Trouessart); Palawan (Trouessart); Sulu (Trouessart).

Sanchez, Los Mamíferos de Filipinas, does not allow this species a place in his list on this authority. Possibly it should be dropped from Philippine lists.

Genus *MYDAUS* F. Cuvier.

1821. *Mydaus* F. CUVIER, Hist. Nat. Mamm., 3, livr. 27, April. *Type*.—*Mydaus meliceps* F. CUVIER.

"Javan skunk." Black, with more or less white on head, nape, and back. Tail very short. Muzzle pointed, nose pig-like. Front claws very long and little curved. Anal glands emitting an odor like that of the American skunks. Head and body about 460 millimeters.

*Mydaus marchei* Huet.

1887. *Mydaus marchei* HUET, Le Naturaliste, II, 9 ann., No. 13, 149, September 15.

*Type locality*.—Palawan. Balábac (Sanchez); Palawan (Huet).

*Mydaus schadenbergii* Jentink.

1895. *Mydaus schadenbergii* JENTINK, Notes from Leyden Mus., 17, No. IX, 46, August.

*Type locality*.—Calamianes Islands. Calamianes (Jentink).

Genus *AONYX* Lesson.

1827. *Aonyx* LESSON, Man. Mammalogie, 157. *Type*.—*Aonyx delalandi* LESSON=*Lutra capensis* SCHINZ.

"Clawless" otters. Color brown; feet webbed, claws rudimentary. Head and body about 470 millimeters, tail about 290.

*Aonyx cinerea* (Illiger).

1815. *Lutra cinerea* ILLIGER, Abh. Ak. Berlin (1811), 99.

1909. *Aonyx cinerea* LYON, Proc. U. S. Nat. Mus., 36, 485, June 1.

*Type locality*.—Near Batavia, Java. Palawan (Allen).

## Family VIVERRIDÆ.

## Genus VIVERRA Linnæus.

1758. *Viverra* LINNÆUS, Syst. Nat., 10 ed., 1, 43. *Type*.—*Viverra zibetha* LINNÆUS.

Civets; the form found in the Philippine Islands with ground color of gray, spotted and striped with black. Tail about half the length of head and body, black and whitish. Head and body about 600 millimeters; tail about 300.

*Viverra zibetha* Gray.

1832. *Viverra zibetha* GRAY, Proc. Zool Soc. London, 63.

*Type locality*.—Indian Archipelago. Calamianes (Bourns & Worcester); Luzon (Thomas); Mindanao (Bourns & Worcester); Mindoro (Bourns & Worcester); Palawan (Thomas); Panay (Bourns & Worcester); Siquijor (Bourns & Worcester).

## Genus PARADOXURUS F. Cuvier.

1821. *Paradoxurus* F. CUVIER, Hist. Nat. Mamm., 3, livr. 24, pl. with text (under 'la marte des palmiers'), January. *Type*.—*Paradoxurus typus* F. CUVIER=*Viverra niger* DESMAREST.

Palm civets. Less strikingly marked than *Viverra*, with longer tail. General color blackish brown, with five or six indistinct stripes of black along back. Top of head, feet, and tail blackish. Head and body about 440 millimeters; tail about 360.

*Paradoxurus minax* Thomas.

1909. *Paradoxurus minax* THOMAS, Ann. and Mag. Nat. Hist., VIII, 3, 275, April.

*Type locality*.—Davao, South Mindanao. Camiguin (Thomas); Mindanao (Thomas).

*Paradoxurus philippinensis* Jourdan.

1837. *Paradoxurus philippinensis* JOURDAN, Compt. rend. Acad. Sci. Paris, 5, 523.

*Type locality*.—Luzon. Basilan (Bourns & Worcester); Leyte (Elera); Luzon (Thomas); Marinduque (Steere); Mindoro (Bourns & Worcester); Negros (Steere); Palawan (Thomas); Panay (Bourns & Worcester); Siquijor (Sanchez).

*Paradoxurus torvus* Thomas.

1909. *Paradoxurus torvus* THOMAS, Ann. and Mag. Nat. Hist., VIII, 3, 375, April.

*Type locality*.—Bongao, Tawi Tawi Group. Bongao (Thomas).



Genus *ARCTICTIS* Temminck.

1824. *Arctictis* TEMMINCK, Prosp. de Monog. des Mamm. [Palmer, Index Gen. Mamm. (1904), 117.] *Type*.—*Viverra* (?) *binturong* RAFFLES.

The binturong. Size large, with tail about as long as head and body. Ears with long tufts of hair. General color black, more or less washed with fulvous. Head and body of Palawan form, 700 millimeters; tail, 710.

*Arctictis whitei* Allen.

1910. *Arctitis* (sic.) *whitei* ALLEN, Bull. Am. Mus. Nat. Hist., 28, 15, January 29.

*Type locality*.—Iwahig, Palawan. Palawan (Allen).

Genus *MUNGOS* Geoffroy and Cuvier.

1795. *Mungos* GEOFFROY AND CUVIER, Mag. Encycl., 2, 184. *Type*.—*Viverra mungos* GMELIN.

Mongoose. The Philippine species, above yellowish-red, marked with black; head paler and grayer than body; under parts reddish-brown. Head and body, 395 millimeters; tail, 190.

*Mungos palawanus* Allen.

1910. *Mungos palawanus* ALLEN, Bull. Am. Mus. Nat. Hist., 28, 17, January 29.

*Type locality*.—Iwahig, Palawan. Palawan (Allen).

*Mungos parvus* (Jentink).

1895. *Herpestes parvus* JENTINK, Notes from Leyden Mus., 17, No. 9, 48, August.

*Type locality*.—Calamianes Islands. Calamianes (Jentink).

Family *FELIDÆ*.Genus *FELIS* Linnæus.

1758. *Felis* LINNÆUS, Syst. Nat., 10 ed., 1, 41. *Type*.—*Felis catus* LINNÆUS.

Cats. Hind feet with only four toes; claws completely retractile. Two species wild in Philippines, one native species and the feral domestic cat. The single known native species is about the size of a well-grown domestic cat, but with relatively longer legs. Markings variable; yellowish-gray to yellow, with dark brown markings. Tail long and spotted.

*Felis catus* Linnæus.

1758. *Felis catus* LINNÆUS, Syst. Nat., 10 ed., 1, 42.<sup>3</sup>

*Type locality*.—Sweden. Luzon, feral (Thomas).

*Felis minuta* Temminck.

1827. *Felis minuta* TEMMINCK, Monogr. des Mamm., 1, 130.

*Type locality*.—Java. Calamianes (Sanchez); Cebu (Thomas); Negros (Thomas); Palawan (Allen); Panay (Thomas).

## Order RODENTIA.

### Family SCIURIDÆ.

Genus *NANNOSCIURUS* Trouessart.

1880. *Nannosciurus* TROUESSART, Le Naturaliste, 2, No. 37, 292, October 1. *Type*.—*Sciurus melanotis* MÜLLER AND SCHLEGEL.

Very small squirrels; not much larger than mice. Head and body about 115 millimeters, tail vertebræ about 72. General color brownish.

*Nannosciurus concinnus* (Thomas).

1888. *Sciurus concinnus* THOMAS, Ann. and Mag. Nat. Hist., VI, 2, 407.

1893. *Nannosciurus concinnus* MAJOR, Proc. Zool. Soc. London, (1893), 189.

*Type locality*.—Isabela, Basilan. Basilan (Thomas); Mindanao (Bourne & Worcester).

*Nannosciurus samaricus* Thomas.

1897. *Nannosciurus samaricus* THOMAS, Minutes Proc. Zool. Soc. London, for June 15, 1897, June 19.

*Type locality*.—Samar. Samar (Thomas).

Genus *SCIURUS* Linnæus.

1758. *Sciurus* LINNÆUS, Syst. Nat., 10 ed., 1, 63. *Type*.—*Sciurus vulgaris* LINNÆUS.

Squirrels. Philippine species all relatively small. Coloration variable, some plain brownish-gray, not conspicuously marked, others with brilliant tails and bellies.

*Sciurus albicauda* Matschie.

1898. *Sciurus albicauda* MATSCHIE, Sitz.-ber. Ges. Nat. Freunde Berlin (1898), No. 5, 42, May.

*Type locality*.—Culion. Culion (Matschie).

<sup>3</sup> For use of the name *Felis catus* for the domestic cat see Pocock, Proc. Zool Soc. London (1907), 149.

*Sciurus juvenus* Thomas.

1908. *Sciurus juvenus* THOMAS, Ann. and Mag. Nat. Hist., VIII, 2, 498, December.

*Type locality*.—Palawan. Palawan (Thomas).

*Sciurus mindanensis* Steere.

1890. *Sciurus mindanensis* STEERE, List Birds and Mamm. Steere. Exp. Philippines, 29, July 14.

1890. *Sciurus cagsi* MEYER, Proc. Zool. Soc. London, 600. (Davao, South Mindanao.)

*Type locality*.—Mindanao. Basilan (Bourns & Worcester); Mindanao (Steere).

*Sciurus möllendorffi* Matschie.

1898. *Sciurus möllendorffi* MATSCHIE, Sitz.-Ber. Ges. Nat. Freunde Berlin (1898), No. 5, 41, May.

*Type locality*.—Culion. Culion (Matschie).

*Sciurus philippinensis* Waterhouse.

1839. *Sciurus philippinensis* WATERHOUSE, Proc. Zool. Soc. London, 7, 117.

*Type locality*.—Mindanao. Balabac (Elera); Basilan (Thomas); Mindanao (Waterhouse).

*Sciurus samarensis* Steere.

1890. *Sciurus samarensis* STEERE, List Birds and Mamm. Steere Exp. Philippines, 30, July 14.

*Type locality*.—Samar. Leyte (Steere); Samar (Steere).

*Sciurus steerii* Günther.

1876. *Sciurus steerii* GÜNTHER, Proc. Zool. Soc. London (1876), 735.

*Type locality*.—Balabac (Günther).

## Family PETAURISTIDÆ.

Genus *SCIUROPTERUS* F. Cuvier.

1825. *Sciuropterus* F. CUVIER, Dents Mammifères, 255. *Type*.—*Sciurus volans* LINNÆUS=*Sciuropterus russicus* (TIEDEMANN).

Flying-squirrels; fore and hind limbs connected by a membrane, forming a parachute. Philippine forms large; fur long and soft; general color brownish above, paler below. Head and body over 300 millimeters; tail over 260.

*Sciuropterus crinitus* Hollister.

1911. *Sciuropterus crinitus* HOLLISTER, Proc. Biol. Soc. Wash. (1911), 24, 185, June 23.

*Type locality*.—Basilan Island. Basilan (Hollister).

*Sciuropterus nigrripes* Thomas.

1893. *Sciuropterus nigrripes* THOMAS, Ann. and Mag. Nat. Hist., VI, 12, 30, July.

*Type locality*.—Puerta Princesa, Palawan. Palawan (Thomas).

## Family MURIDÆ.

## Genus CELÆNOMYS Thomas.

1898. *Celænomys* THOMAS, Trans. Zool. Soc. London, 14, pt. VI, 390, June. *Type*.—*Xeromys* (?) *silaceus* THOMAS.

Size of a common rat. Fur soft and velvety. General color uniform slate-gray. Ears short. Upper and lower cheek teeth two only on each side. Head and body, 195 millimeters; tail, 110; hind foot, 33.

*Celænomys silaceus* (Thomas).

1895. *Xeromys* (?) *silaceus* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 161.

1898. *Celænomys silaceus* THOMAS, Trans. Zool. Soc. London, 14, pt. VI, 390, June.

*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).

## Genus CRUNOMYS Thomas.

1898. *Crunomys* THOMAS, Trans. Zool. Soc. London, 14, pt. VI, 393, June. *Type*.—*Crunomys fallax* THOMAS.

Fur short and close, mixed with flattened spines. General color pale grayish, lined with yellowish on the back; dorsal spines white, black at tips. Ears short. Molars 3/3. Head and body, 105 millimeters; tail, 79; hind foot, 23.

*Crunomys fallax* Thomas.

1897. *Crunomys fallax* THOMAS, Minutes Proc. Zool. Soc. London for June 15, 1897, June 19, 1897.\*

*Type locality*.—Isabella, Luzon. Luzon (Thomas).

*Crunomys melanius* Thomas.

1907. *Crunomys melanius* THOMAS, Abstract Proc. Zool. Soc. London, No. 39, 5. February 12.

*Type locality*.—Mount Apo, Mindanao; 914 meters. Mindanao (Thomas).

\* Reference not verified; from Thomas, *Trans. Zool. Soc. London* (1898), 14, 394, June. Possibly not first described in genus *Crunomys*, which apparently was first diagnosed in June, 1898.

Genus *CHROTOMYS* Thomas.1895. *Chrotomys* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 161.*Type*.—*Chrotomys whiteheadi* THOMAS.

About the size of the common rat, with much shorter tail. Back prominently marked with one buff and two blackish stripes, extending from between eyes to rump. Head and body, 196 millimeters; tail, 111; hind foot, 35.

*Chrotomys whiteheadi* Thomas.1895. *Chrotomys whiteheadi* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 161.*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).Genus *RHYNCHOMYS* Thomas.1895. *Rhynchomys* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 160.*Type*.—*Rhynchomys soricoides* THOMAS.

Size of common rat; fur thick, close, and velvety; muzzle greatly elongated; tail shorter than head and body, rat-like, scaly and thinly-haired; general color dark olivaceous-gray, extreme tip of tail usually white. Teeth very small; molars 2/2.

*Rhynchomys soricoides* Thomas.1895. *Rhynchomys soricoides* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 160.*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).Genus *PHLÆOMYS* Waterhouse.1839. *Phlæomys* WATERHOUSE, Proc. Zool. Soc. London, 7, 108. *Type*.—*Mus cumingi* WATERHOUSE.

Size large (head and body about 440 millimeters; tail about 350). Muzzle blunt; ears hairy externally; tail thickly haired. Incisor teeth very broad. Colors black, or black and white.

*Phlæomys cumingi* (Waterhouse).1839. *Mus (Phlæomys) cumingi* WATERHOUSE, Proc. Zool. Soc. London, 7, 108.1843. *Phlæomys cumingi* GRAY, List. Mamm. British Mus., 115.1895. ? *Phlæomys albayensis* ELERA, Cat. Sist. Fauna Filip., 1, 21. (*Nomen nudum*.)*Type locality*.—Luzon. Luzon (Waterhouse); Marinduque (Steere); Mindoro (Trouessart).*Phlæomys pallidus* Nehring.1890. *Phlæomys pallidus* NEHRING, Sitz.-ber. Ges. Nat. Freunde Berlin, No. 6, 106, June 17.*Type locality*.—Luzon. Luzon (Thomas); Marinduque (Thomas).

Genus *EPIMYS* Trouessart.

1881. *Epimys* TROUESSART, Bull. Soc. d'Etudes Sci. d'Angers, 10, 117.

Type.—*Mus rattus* LINNÆUS.

True rats. Size and appearance variable, from small soft-haired mouse-like species to large coarse-furred rats, larger than the Norway rat. Several species have spines, mixed with the fur of the back, in certain pelages. Tail usually little furred, scaly and relatively long. Molars  $3/3$ , slightly graduated in size from first to third.

*Epimys albigularis* (Mearns).

1905. *Mus albigularis* MEARNs, Proc. U. S. Nat. Mus., 28, 440.

Type locality.—Mount Apo, Mindanao; 2,316 meters. Mindanao (Mearns).

*Epimys calcis* Hollister.

1911. *Epimys calcis* HOLLISTER, Proc. Biol. Soc. Wash., 24, 89, May 15, 1911.

Type locality.—Limestone Hills, near Lime Kiln, Baguio, Benguet, Luzon. Luzon (Hollister).

*Epimys datae* (Meyer).

1899. *Mus datae* MEYER, Abhandl. und Berichte des Königl. Zool. Mus. Dresden, (1898-99), 7, No. 7, p. 25.

Type locality.—Mount Data, northern Luzon. Luzon (Meyer).

*Epimys ephippium* (Jentink).

1880. *Mus ephippium* JENTINK, Notes from Leyden Mus., 2, 15.

1911. *Epimys ephippium* LYON, Proc. U. S. Nat. Mus., 40, 98, April 25.

Type locality.—Sumatra. Palawan (Trouessart).

*Epimys everetti* (Günther).

1879. *Mus everetti* GÜNTHER, Proc. Zool. Soc. London, 75.

1910. *Epimys everetti* MILLER, Proc. U. S. Nat. Mus., 38, 398, August 19.

Type locality.—Philippine Islands. Luzon (Trouessart); Mindanao (Elera).

*Epimys gala* Miller.

1910. *Epimys gala* MILLER, Proc. U. S. Nat. Mus., 38, 398, August 19.

Type locality.—Alag River, Mindoro. Mindoro (Miller).

*Epimys kelleri* (Mearns).

1905. *Mus kelleri* MEARNs, Proc. U. S. Nat. Mus., 28, 444.

Type locality.—Davao, Mindanao. Mindanao (Mearns).



***Epimys luteiventris* (Allen).**

1910. *Mus luteiventris* ALLEN, Bull. Am. Mus. Nat. Hist., 28, 14, January 29.

*Type locality*.—Iwahig, Palawan. Palawan (Allen).

***Epimys luzonicus* (Thomas).**

1895. *Mus luzonicus* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 163.

*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).

***Epimys magnirostris* (Mearns).**

1905. *Mus magnirostris* MEARNES, Proc. U. S. Nat. Mus., 28, 441.

*Type locality*.—Zamboanga, Mindanao. Mindanao (Mearns).

***Epimys mindanensis* (Mearns).**

1905. *Mus mindanensis* MEARNES, Proc. U. S. Nat. Mus., 28, 442.

*Type locality*.—Todaya, Mount Apo, Mindanao; 1,219 meters. Mindanao (Mearns).

***Epimys mindorensis* (Thomas).**

1897. *Mus mindorensis* THOMAS, Minutes Proc. Zool. Soc. London for June 15, 1897, June 19.

*Type locality*.—Mount Dulangan, Mindoro. Mindoro (Thomas).

***Epimys neglectus* (Jentink).**

1880. *Mus neglectus* JENTINK, Notes from Leyden Mus., 2, 14, January.

1911. *Epimys neglectus* LYON, Proc. U. S. Nat. Mus., 40, 98, April 25.

*Type locality*.—Borneo. Mindoro (Thomas).

***Epimys negrinus* (Thomas).**

1898. *Mus ephippium negrinus* THOMAS, Trans. Zool. Soc. London, 14, pt. 6, p. 403, June.

1911. *Epimys negrinus* HOLLISTER, Proc. Biol. Soc. Wash., 24, 90, May 15.

*Type locality*.—Negros Island; 2,011 meters. Negros (Thomas).

***Epimys norvegicus* (Erxleben).**

1777. *Mus norvegicus* ERXLEBEN, Syst. Regn. Anim., Class I, Mamm., 381.

1908. *Epimys norvegicus* SATUNIN, Mitt. Kaukas. Mus., Tiflis, 4, 59.

*Type locality*.—Norway. Luzon (Thomas); Samar (Sanchez); Masbate (Sanchez); Mindoro (Sanchez).

***Epimys pantarensis* (Mearns).**

1905. *Mus pantarensis* MEARNES, Proc. U. S. Nat. Mus., 28, 448.

*Type locality*.—Pantar, Mindanao; 581 meters. Mindanao (Mearns).

*Epimys querceti* Hollister.

1911. *Epimys querceti* HOLLISTER, Proc. Biol. Soc. Wash., 24, 90, May 15, 1911.

*Type locality*.—Hights-in-the-Oaks, Benguet, Luzon. Luzon (Hollister).

*Epimys rattus* (Linnæus).

1758. *Mus rattus* LINNÆUS, Syst. Nat., 10 ed., 1, 61.

1908. *Epimys rattus* SATUNIN, Mitt. Kaukas. Mus., Tiflis, 4, 60.

*Type locality*.—Upsala, Sweden. Luzon (Sanchez); Masbate (Sanchez); Mindoro (Thomas); Negros (Thomas); Samar (Sanchez).

*Epimys tagulayensis* (Mearns).

1905. *Mus tagulayensis* MEARNs, Proc. U. S. Nat. Mus., 28, 439.

*Type locality*.—Tagulaya, Gulf of Davao, Mindanao. Mindanao (Mearns).

*Epimys todayensis* (Mearns).

1905. *Mus todayensis* MEARNs, Proc. U. S. Nat. Mus., 28, 445.

*Type locality*.—Todaya, Mount Apo, Mindanao; 1,219 meters. Mindanao (Mearns).

*Epimys tyrannus* Miller.

1910. *Epimys tyrannus* MILLER, Proc. U. S. Nat. Mus., 38, 397, August 19.

*Type locality*.—Ticao Island. Ticao (Miller).

*Epimys vulcani vulcani* (Mearns).

1905. *Mus vulcani* MEARNs, Proc. U. S. Nat. Mus., 28, 446.

1911. *Epimys vulcani* HOLLISTER, Proc. Biol. Soc. Wash., 24, 89, May 15.

*Type locality*.—Mount Apo, Mindanao; 2,316 meters. Mindanao (Mearns).

*Epimys vulcani apicis* (Mearns).

1905. *Mus vulcani apicis* MEARNs, Proc. U. S. Nat. Mus., 28, 447.

*Type locality*.—Summit of Mount Apo, Mindanao; 2,956 meters. Mindanao (Mearns).

*Epimys zamboangæ* (Mearns).

1905. *Mus zamboangæ* MEARNs, Proc. U. S. Nat. Mus., 28, 443.

*Type locality*.—Zamboanga, Mindanao. Mindanao (Mearns).

Genus *BULLIMUS* Mearns.

1905. *Bullimus* MEARNs, Proc. U. S. Nat. Mus., 28, 450. *Type*.—

*Bullimus bagobus* MEARNs.

Similar to *Epimys*; size medium; muzzle long; pelage coarse, containing a mixture of ordinary coarse hair and slender spines

on upper surface. Color brown above, yellowish-white below. Molars with crowns much higher than in *Epimys*; mammæ, 1-3=8.

Regarded by Thomas, *Proc. Zool. Soc. London* (1907), 141, as a synonym of *Epimys*. The peculiar mammary formula and the hypsodont molars seem sufficient characters to warrant its retention as a full genus.

*Bullimus bagobus* Mearns.

1905. *Bullimus bagobus* MEARNS, *Proc. U. S. Nat. Mus.*, 28, 450.

*Type locality*.—Todaya, Mount Apo, Mindanao. Mindanao (Mearns).

Genus *LIMNOMYS* Mearns.

1905. *Limnomys* MEARNS, *Proc. U. S. Nat. Mus.*, 28, 451. *Type*.—*Limnomys sibuanus* MEARNS.

A small rat with long heavy fur; tail longer than head and body, thinly haired, annulations plainly visible except near end. General color above reddish-brown, below cream buff; upper surfaces of feet seal brown. Head and body, 125 millimeters; tail, 150; hind foot, 30.

*Limnomys sibuanus* Mearns.

1905. *Limnomys sibuanus* MEARNS, *Proc. U. S. Nat. Mus.*, 28, 452.

*Type locality*.—Mount Apo, Mindanao; 2,011 meters. Mindanao (Mearns).

Genus *TRYPHOMYS* Miller.

1910. *Tryphomys* MILLER, *Proc. U. S. Nat. Mus.*, 38, 399, August 19. *Type*.—*Tryphomys adustus* MILLER.

Size of a small common rat; fur of back coarse and harsh. Outer digits of hind foot short, neither extending beyond bases of three middle digits. Above mixed brown and black, under parts buffy white. Head and body, 174 millimeters; tail, 150; hind foot, 33.

*Tryphomys adustus* Miller.

1910. *Tryphomys adustus* MILLER, *Proc. U. S. Nat. Mus.*, 38, 399, August 19.

*Type locality*.—Hights-in-the-Oaks, Benguet, Luzon. Luzon (Miller).

Genus *MUS* Linnæus.

1758. *Mus* LINNÆUS, *Syst. Nat.*, 10 ed., 1, 59. *Type*.—*Mus musculus* LINNÆUS.

Small mice like the common house mouse. Anterior upper molar longer than the two posterior upper molars combined.

*Mus castaneus* Waterhouse.

1843. *Mus castaneus* WATERHOUSE, Ann. and Mag. Nat. Hist., 12, 134.

*Type locality*.—Philippine Islands. Cebu (Elera); Luzon (Elera).

*Mus commissarius* Mearns.

1905. *Mus commissarius* MEARNS, Proc. U. S. Nat. Mus., 28, 449.

*Type locality*.—Davao, Mindanao. Luzon (Miller); Mindanao (Mearns).

Elera's record of *Mus musculus* doubtless belongs here. It seems strange that *Mus musculus* should not occur in the Philippine Islands; but all the specimens of true *Mus* from the Islands, in the collection of the United States National Museum, prove to be *Mus commissarius* Mearns. Possibly *M. commissarius*=*M. castaneus* Waterhouse.

#### Genus *TARSOMYS* Mearns.

1905. *Tarsomys* MEARNS, Proc. Biol. Soc. Wash., 28, 453. *Type*.—*Tarsomys apoensis* MEARNS.

Resembling *Epinomys*. Pelage long and rather coarse, sometimes slightly spiny. Tail concolor, quite thickly haired; toes tufted at base of claws. General color rich brownish-slate, more yellowish-brown below. Head and body, 135 millimeters; tail, 120; hind foot, 32.

*Tarsomys apoensis* Mearns.

1905. *Tarsomys apoensis* MEARNS, Proc. U. S. Nat. Mus., 28, 453.

*Type locality*.—Mount Apo, Mindanao; 2,057 meters. Mindanao (Mearns).

#### Genus *BATOMYS* Thomas.

1895. *Batomys* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 162. *Type*.—*Batomys grantii* THOMAS.

Large, very heavily furred rats. Ears broad and rounded; tail slightly shorter than head and body. Upper parts dark, rich fulvous brown, below paler. Head and body about 200 millimeters; tail about 185; hind foot, 36.

*Batomys dentatus* Miller.

1910. *Batomys dentatus* MILLER, Proc. U. S. Nat. Mus., 38, 400, August 19.

*Type locality*.—Hights-in-the-Oaks, Benguet, Luzon, 2,134 meters. Luzon (Miller).

*Batomys grantii* Thomas.

1895. *Batomys grantii* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 162.

*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).

Genus **CARPOMYS** Thomas.

1895. *Carpomys* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 161.  
*Type*.—*Carpomys melanurus* THOMAS.

Externally somewhat similar to *Batomys*; fur thick and woolly; tail long, well haired, darker in color than body. General color deep fulvous, coarsely lined with black; under parts dull yellowish-white. Head and body about 197 millimeters; tail, 175 to 211; hind foot, 31 to 34.

*Carpomys melanurus* Thomas.

1895. *Carpomys melanurus* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 162.

*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).

*Carpomys phæurus* Thomas.

1895. *Carpomys phæurus* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 162.

*Type locality*.—Highlands of northern Luzon. Luzon (Thomas).

Genus **CRATEROMYS** Thomas.

1895. *Crateromys* THOMAS, Ann. and Mag. Nat. Hist., VI, 16, 163.  
*Type*.—*Phlæomys schadenbergi* MEYER.

Size very large; externally somewhat like *Phlæomys*, but with more bushy tail and much smaller claws. Muzzle pointed. Normal color black; some specimens are gray or black and gray. Head and body about 440 millimeters; tail about 425.

*Crateromys schadenbergi* (Meyer).

1895. *Phlæomys schadenbergi* MEYER, Abhandl. und Berichte des Königl. Zool. Mus. Dresden (1894-95), No. 6, 1.  
 1896. *Crateromys schadenbergi* MEYER, Abhandl. und Berichte Königl. Zool. Mus. Dresden (1896-97), No. 6, 32.

*Type locality*.—Mount Data, Luzon. Luzon (Meyer).

Genus **APOMYS** Mearns.

1905. *Apomys* MEARNS, Proc. U. S. Nat. Mus., 28, 455. *Type*.—*Apomys hylocætes* MEARNS.

Smallish brown rats, much like the smaller species of *Epimys*. Tail nearly bare of hairs; anterior upper molar about equal in length to posterior two, and posterior upper molar very small, as in *Mus*.

**Apomys bardus** Miller.

1910. *Apomys bardus* MILLER, Proc. U. S. Nat. Mus., 38, 402, August 19.

*Type locality*.—Mount Bliss, Mindanao; 1,753 meters. Mindanao (Miller).

**Apomys hylocætes** Mearns.

1905. *Apomys hylocætes* MEARNs, Proc. U. S. Nat. Mus., 28, 456.

*Type locality*.—Mount Apo, Mindanao; 1,829 meters. Mindanao (Mearns).

**Apomys insignis** Mearns.

1905. *Apomys insignis* MEARNs, Proc. U. S. Nat. Mus., 28, 459.

*Type locality*.—Mount Apo, Mindanao; 1,829 meters. Mindanao (Mearns).

**Apomys major** Miller.

1910. *Apomys major* MILLER, Proc. U. S. Nat. Mus., 38, 402, August 19.

*Type locality*.—Hights-in-the-Oaks, Benguet, Luzon; 2,134 meters. Luzon (Miller).

**Apomys musculus** Miller.

1910. *Apomys musculus* MILLER, Proc. U. S. Nat. Mus., 38, 403, August 19.

*Type locality*.—Camp John Hay, Baguio, Benguet, Luzon; 1,524 meters. Luzon (Miller).

**Apomys petræus** Mearns.

1905. *Apomys petræus* MEARNs, Proc. U. S. Nat. Mus., 28, 458.

*Type locality*.—Mount Apo, Mindanao; 2,316 meters. Mindanao (Mearns).

## Family HYSTRICIDÆ.

Genus **THECURUS** Lyon.

1907. *Thecurus* LYON, Proc. U. S. Nat. Mus., 32, 582, June 29.

*Type*.—*Thecurus sumatræ* LYON.

Small porcupines, with short tail (less than one-fourth the length of head and body). Body covered with flattened spines, lower back with long, round quills.

**Thecurus pumilus** (Günther).

1879. *Hystrix pumila* GÜNTHER, Ann. and Mag. Nat. Hist., V, 4, 106.

*Type locality*.—Puerto Princesa, Palawan. Balabac (Sanchez); Calamianes (Bourns & Worcester); Palawan (Günther).



## Order PHOLIDOTA.

## Family MANIDÆ.

## Genus MANIS Linnæus.

1758. *Manis* LINNÆUS, Syst. Nat., 10 ed., 1, 36. Type.—*Manis pentadactyla* LINNÆUS.

Pangolins or scaly anteaters. Upper parts of body, and tail above and below, covered with horny scales. Three middle claws long and curved. No teeth.

*Manis javanica* Desmarest.

1822. *Manis javanica* DESMAREST, Mammalogie 2, 377.

Type locality.—Java. Culion (Elera); Palawan (Bourns & Worcester).

## Order PRIMATES.

## Family LEMURIDÆ.

## Genus NYCTICEBUS Geoffroy.

1812. *Nycticebus* GEOFFROY, Ann. Mus. Hist. Nat., Paris, 19, 163.

Type.—*Nycticebus bengalensis* GEOFFROY=*Tardigradus coucang* BODDAERT.

Slow lemurs. Small nocturnal lorises with no external tail. A white streak between eyes and a dark stripe from head down back. Head and body about 285 millimeters; hind foot, 66.

*Nycticebus menagensis* (Lydekker).

1893. *Lemur menagensis* LYDEKKER, Zool. Rec. (1892), 29, 25.

1908. *Nycticebus philippinus* CABRERA, Bol. Real. Soc. Esp. Hist. Nat. 8, No. 3, p. 137, March. (Mindanao ?)

1908. *Nycticebus menagensis* THOMAS, Ann. and Mag. Nat. Hist., VIII, 1, 469, June.

Type locality.—Bongao and Tawi Tawi. Bongao (Bourns & Worcester); Bohol (Elera); Mindanao ? (Cabrera); Tawi Tawi (Bourns & Worcester).

Should the slow lemur prove to inhabit Mindanao, and the specimens agree with Cabrera's type of *N. philippinus*, and differ from the form found in Bongao and Tawi Tawi, both names will stand, though *philippinus* was proposed chiefly to replace *menagensis*, which Cabrera supposed to be without standing in nomenclature.

## Family TARSIIDÆ.

## Genus TARSIVS Storr.

1780. *Tarsius* STORR, Prodr. Meth. Mamm., 33, tab. A. Type.—*Lemur tarsius* 'ERKLEBEN' (= *Lemur tarsier* ERKLEBEN).

Tarsiers. Small monkey-like animals with large eyes and ears, long fingers and toes, and long tail. Tail naked except at extreme base and tip. Head and body about 120 millimeters; tail about 210; hind foot about 60.

*Tarsius carbonarius* Heude.

1899. *Tarsius carbonarius* HEUDE, Mém. Hist. Nat. Emp. Chinois, 4, pt. 4, 164, pl. 33, figs. 1, 2, and 3.

Type locality.—Gulf of Davao, Mindanao. Mindanao (Heude).

*Tarsius fraterculus* Miller.

1910. *Tarsius fraterculus* MILLER, Proc. U. S. Nat. Mus., 38, 404, August 19.

Type locality.—Sevilla, Bohol. Bohol (Miller).

*Tarsius philippensis* Meyer.

1895. *Tarsius philippensis* MEYER, Abhand. und Berichte des Königl. Zool. Mus. Dresden (1894-95), No. 1, 1.

Type locality.—Mindanao, Leyte, and Samar. Leyte (Meyer); Luzon (Trouessart); Mindanao (Meyer); Samar (Meyer).

## Family CERCOPITHECIDÆ.

## Genus PITHECUS Geoffroy and Cuvier.

1795. *Pithecus* GEOFFROY AND CUVIER, Mag. Encycl., 3, 462. Type.—

Medium sized monkeys commonly known as macaques. Philippine species with long tails, about as long as head and body.

*Pithecus cagayanus* (Mearns).

1905. *Cynomolgus cagayanus* MEARNS, Proc. U. S. Nat. Mus., 28, 431.

Type locality.—Cagayan Sulu Island, Sulu Sea. Cagayan Sulu (Mearns).

\* Thomas, Proc. Zool. Soc. London (1911), 125, shows that *Simia* Linnaeus is the proper generic name of the Barbary macaque. If this monkey, *Simia inuus* Linnaeus, be congeneric with the Malayan group of long-tailed macaques, lately called *Pithecus*, as seems very doubtful, the name *Simia* will stand for all the Philippine species. Without seeing the original publication of *Pithecus*, I do not feel justified in selecting a type for the genus, which apparently has not yet been done.

*Pithecus mindanensis mindanensis* (Mearns).

1905. *Cynomolgus mindanensis* MEARNs, Proc. U. S. Nat. Mus., 28, 428.

*Type locality*.—Pantar, Mindanao; 579 meters. Basilan (Mearns); Mindanao (Mearns).

*Pithecus mindanensis apoensis* (Mearns).

1905. *Cynomolgus mindanensis apoensis* MEARNs, Proc. U. S. Nat. Mus., 28, 429.

*Type locality*.—Mount Apo, Mindanao; 1,829 meters. Mindanao (Mearns).

*Pithecus suluensis* (Mearns).

1905. *Cynomolgus suluensis* MEARNs, Proc. U. S. Nat. Mus., 28, 430.

*Type locality*.—Crater Lake Mountain, Sulu. Sulu (Mearns).

*Pithecus syrichta* (Linnæus).

1758. *Simia syrichta* LINNÆUS, Syst. Nat., 10 ed., 1, 29.

1843. *Macacus philippinensis* I. GEOFFROY, Archive du Mus. d'Hist. Nat., 2, 568, pl. XXXIII, 1841 (1843). (Manila, Luzon.)

1851. *Macacus palpebrosus* I. GEOFFROY, Cat. des Primates, 93. (Manila, Luzon.)

1867. *Macacus fur* SLACK, Proc. Acad. Nat. Sci. Phila., 19, 36, pl. 1. (Luzon.)

1870. *Macacus cynomolgus* var. *cumingii* GRAY, Cat. Monk., Lemurs, and Fruit-eating Bats, 30. (Philippine Islands.)

*Type locality*.—Luzon. Leyte (Steere); Luzon (Mearns); Mindoro (Thomas); Negros (Steere); Palawan (Steere); Samar (Steere).

#### Genus CYNOPITHECUS I. Geoffroy.

1835. *Cynopithecus* I. GEOFFROY, in Gervais' Résumé Leçons de Mammalogie au Muséum, 16. [Fide Palmer, Index Gen. Mamm., (1904), 212.] *Type*.—*Cynopithecus niger* (DESMAREST).

The black ape of Celebes. Size larger than *Pithecus*, tail very short; color black.

*Cynopithecus niger* (Desmarest).

1822. *Cynocephalus niger* DESMAREST, Mammalogie, pt. 2, Suppl., 534.

1840. *Cynopithecus niger* LESSON, Spéc. des Mamm. Bimanes et Quadrumanes, 101.

*Type locality*.—"Indian Archipelago," probably Celebes. Negros (Elera); Sulu (Elera).

Probably introduced. Regarded by Sanchez as occurring only as a captive or escaped animal, and not admitted in his list.

## Family HYLOBATIDÆ.

Genus HYLOBATES Illiger.

1811. *Hylobates* ILLIGER, Prodr. Syst. Mamm. et Avium, 67. *Type*.—*Simia lar*=*Homo lar* LINNÆUS.

Gibbons. Size large, body and limbs slender, arms especially long, the hands reaching ground when animal walks upright. No tail.

*Hylobates funereus* I. Geoffroy.

1850. *Hylobates funereus* I. GEOFFROY, Compt. rend. Acad. Sci., 31, 874.

*Type locality*.—Sulu. Sulu (Geoffroy).

Regarded by Sanchez as an introduced species, found only in captivity, and not admitted in his list, Los Mamíferos de Filipinas, 178.

## Order ARTIODACTYLA.

## Family SUIDÆ.

Genus SUS Linnæus.

1758. *Sus* LINNÆUS, Syst. Nat., 10 ed., 1, 49. *Type*.—*Sus scrofa* LINNÆUS.

Pigs. Size large; snout elongated. Hoofs of middle toes with inner surfaces flattened. Upper incisor teeth present.

*Sus ahoenobarbus* Huet.

1888. *Sus ahoenobarbus* HUET, Le Naturaliste, II, No. 20, 5, January.

*Type locality*.—Palawan. Calamianes (Bourns & Worcester); Palawan (Huet).

*Sus barbatus balabacensis* Major.

1897. *Sus barbatus balabacensis* MAJOR, Ann. and Mag. Nat. Hist., VI, 19, 534.

*Type locality*.—Balabac Island. Balabac (Major).

*Sus barbatus palavensis* Nehring.

1889. *Sus barbatus* var. *palavensis* NEHRING, Abhandl. und Berichte des Königl. Zool. Mus. Dresden (1888-89) 22.

*Type locality*.—Puerto Princesa, Palawan. Palawan (Nehring).

*Sus calamianensis* Heude.

1892. *Sus calamianensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 114, pl. XX B, fig. 3.

*Type locality*.—Calamianes Islands (Heude, l. c., p. 221). Culion (Nehring).

*Sus cebifrons* (Heude).

1892. *Neosus cebifrons* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 106.  
1897. *Sus cebifrons* MAJOR, Ann. and Mag. Nat. Hist., VI, 19, 527.

*Type locality*.—Masbate (Heude, l. c., p. 106) or Cebu (Heude, l. c., p. 218). Cebu (Heude); Masbate (Heude).

**Sus inconstans** Heude.

1892. *Sus inconstans* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 2, 67.

*Type locality*.—Mindanao. Mindanao (Heude).

**Sus mindanensis** Major.

1897. *Sus verrucosus mindanensis* MAJOR, Ann. and Mag. Nat. Hist., VI, 19, 524.

*Type locality*.—Ayala, Mindanao. Mindanao (Major).°

**Sus minutus** Heude.

1892. *Sus minutus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 114, pl. XXB, fig. 1.

*Type locality*.—La Laguna to Tarlac, Luzon [see Heude, l. c., (1899), 4, 127]. Luzon (Heude).

**Sus philippensis** Nehring.

1886. *Sus philippensis* NEHRING, Sitz.-Ber. Ges. Nat. Freunde Berlin, No. 5, 83, May.

1888. *Sus marchei* HUET, Le Naturaliste, II, No. 20, 6, January. (Laguna Province, Luzon.)

1892. *Sus arietinus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 114, pl. XX, fig. 1. (Manila (?)) "Je dois une tête montée du sujet dont le crâne a été dessiné à M. de la Guardia, de Manille," l. c., p. 114.)

1892. *Sus effrenus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 114, pl. XXB, fig. 2. (Jala Jala, Laguna de Bay, Luzon.—Heude, l. c., p. 215.)

1892. *Sus microtis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 115, pl. 20B, fig. 6. (Jala Jala, Laguna de Bay, Luzon.—Heude, l. c., p. 216.)

1892. *Sus frenatus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 114, pl. 27, fig. 1, 2, 3, and 7. (Jala Jala, Laguna de Bay, Luzon.—Heude, l. c., p. 216.)

*Type locality*.—Luzon. Basilan (Steere); Luzon (Nehring); Mindanao (Bourns & Worcester); Mindoro (Steere); Negros (Bourns & Worcester); Panay (Bourns & Worcester); Samar (Bourns & Worcester); Sibuyan (Bourns & Worcester); Sulu (Bourns & Worcester); Tawi Tawi (Bourns & Worcester).

## Family TRAGULIDÆ.

## Genus TRAGULUS Brisson.

1762. *Tragulus* BRISSON, Regn. Anim., 2 ed., 12. *Type*.—*Tragulus indicus* BRISSON.

Mouse-deer. Pygmy deer-like ruminants without horns; toes provided with hoofs; no upper incisors; upper canines especially developed. Head and body about 575 millimeters.

**Tragulus nigricans** Thomas.

1892. *Tragulus nigricans* THOMAS, Ann. and Mag. Nat. Hist., VI, 9, 250, March.

*Type locality*.—Balabac. Balabac (Thomas).

## Family CERVIDÆ.

## Genus RUSA Smith.

1827. *Rusa* H. SMITH, Griffith's Cuvier, 5, 309. *Type*.—*Cervus equinus* CUVIER.

Deer of varying size, from small to large, with rounded antlers, only slightly curved, with brown-tint, and beam simple forked at extremity. Females without horns.

*Rusa alfredi* (Sclater).

1870. *Cervus alfredi* SCLATER, Proc. Zool. Soc. London, 381.

*Type locality*.—Philippines (received from Manila). Cebu (Elera); Guimaras (Sanchez); Leyte (Lydekker); Masbate (Sanchez); Negros (Elera); Panay (Elera); Samar (Lydekker).

*Rusa culionensis* (Elliot).

1897. *Cervus culionensis* ELLIOT, Field Mus. Pub. Zool., 1, No. 7 (not paged), June.

*Type locality*.—Culion Island. Culion (Elliot).

*Rusa nigricans* (Brooke).

1877. *Cervus nigricans* BROOKE, Proc. Zool. Soc. London (1877), part 1, 57, June 1.

*Type locality*.—Philippines. Basilan (Lydekker).

*Rusa philippinus* (Smith).

1827. *Cervus philippinus* SMITH, Griffith's Anim. Kingd., 4, 147.

1850. *Rusa philippinus* GRAY, Knowsley Menag., 63.

*Type locality*.—Philippine Islands, probably Luzon. Luzon (Lydekker).

Believed by Lydekker, Deer of All Lands, 158, to be the same as *Cervus mariannus* Desmarest, 1820, described from Ladrone Islands.

*Rusa steerii* (Elliot).

1896. *Cervus steerii* ELLIOT, Field Col. Mus. Pub. Zool., 1, No. 3, 72, May.

*Type locality*.—Basilan Island. Basilan (Elliot).

*[Rusa tavistocki* (Lydekker).

1900. *Cervus (Rusa) tavistocki* LYDEKKER, Ann. and Mag. Nat. Hist., VII, 6, 205.

*Type locality*.—Unknown; "probably Philippines." Probably synonym of one of the following species described by Heude.]

The following forty-one species of deer from the Philippine Islands have been named by P. M. Heude in the Mémoires concernant l'Histoire Naturelle de l'Empire Chinois.



Many of these names are surely synonyms, while a few are probably valid for species or subspecies of Philippine deer. Until series of deer skulls from all parts of the Philippine Islands, and especially from the type localities of all described forms, are assembled for study, it will be impossible satisfactorily to deal with these names. I have arranged them alphabetically by species, regardless of the genus in which they have been described. As no complete list of these names, with references and type localities, has ever been published, and for general uniformity, the reference to each name is given in full as throughout the list. No attempt has been made to improve on the combination employed by the describer.

USSA AMBROSIANUS Heude.

1888. *Ussa ambrosianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 27.

*Type locality*.—Nueva Ecija, Luzon.

USSA ATHENEENSIS Heude.

1899. *Ussa atheneensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 4, pt. 3, 138.

*Type locality*.—Luzon.

USSA BARANDANUS Heude.

1888. *Ussa barandanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 22.

*Type locality*.—Mindoro.

USSA BARYCEROS Heude.

1899. *Ussa baryceros* HEUDE, Mem. Hist. Nat. Emp. Chinois, 4, pt. 3, 139.

*Type locality*.—La Laguna and Batangas, Luzon.

MELANAXIS BASILANENSIS Heude.

1888. *Melanaxis basilanensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 49.

*Type locality*.—Basilan Island.

USSA BRACHYCEROS Heude.

1888. *Ussa brachyceros* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 36.

*Type locality*.—Batangas, Luzon.

MELANAXIS BREVICEPS Heude.

1888. *Melanaxis breviceps* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 48.

*Type locality*.—Masbate Island.

HYELAPHUS CALAMIANENSIS Heude.

1888. *Hyelaphus calamianensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 49.

*Type locality*.—Calamian, P. I.

## USSA CHRYSOTRICHOS Heude.

1888. *Ussa chrysotrichos* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 39.

*Type locality*.—La Laguna and Batangas, Luzon.

## USSA CINEREUS Heude.

1899. *Ussa cinereus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 4, pt. 3, 140.

*Type locality*.—Cebu Island.

## USSA CORTEANUS Heude.

1888. *Ussa corteanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 37.

*Type locality*.—Mariveles, Luzon.

## USSA CRASSICORNIS Heude.

1888. *Ussa crassicornis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 23.

*Type locality*.—Cebu.

## USSA DAILLIARDIANUS Heude.

1888. *Ussa dailliardianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 32.

*Type locality*.—Jala-Jala, Laguna, Luzon.

## MELANAXIS (?) ELEGANS Heude.

1888. *Melanaxis* (?) *elegans*, HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 49.

*Type locality*.—Philippine Islands.

## USSA ELORZANUS Heude.

1888. *Ussa elorzanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 28.

*Type locality*.—Bataan Province, Luzon.

## USSA FRANCIANUS Heude.

1888. *Ussa francianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 24.

*Type locality*.—Mati, Mindanao.

## USSA GARCIANUS Heude.

1888. *Ussa garcianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 29.

*Type locality*.—Nueva Ecija, Luzon.

## USSA GONZALINUS Heude.

1888. *Ussa gonzalinus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 35.

*Type locality*.—Philippines, probably Luzon.

## USSA GORRICHANUS Heude.

1888. *Ussa gorrichanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 21.

*Type locality*.—Batangas, Luzon.

## USSA GUEVARANUS Heude.

1888. *Ussa guevaranus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 40.

*Type locality*.—Mariquina, Luzon.

## USSA GUIDOTEANUS Heude.

1888. *Ussa guidoteanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 29.

*Type locality*.—Batangas, Luzon.

## USSA HIPOLITIANUS Heude.

1888. *Ussa hipolitianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 39.

*Type locality*.—La Laguna and Batangas, Luzon.

## USSA LONGICUSPIS Heude.

1888. *Ussa longicuspis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 34.

*Type locality*.—Philippines, probably Luzon.

## USSA MACARIANUS Heude.

1888. *Ussa macarianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 28.

*Type locality*.—Nueva Ecija, Luzon.

## USSA MARAISIANUS Heude.

1888. *Ussa maraisianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 31.

*Type locality*.—Jala-Jala, Laguna de Bay, Luzon.

## USSA MARZANINUS Heude.

1888. *Ussa marzaninus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 33.

*Type locality*.—Nueva Ecija and La Laguna, Luzon.

## MELANAXIS MASBATENSIS Heude.

1888. *Melanaxis masbatensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 47.

*Type locality*.—Masbate Island.

## USSA MICHAELINUS Heude.

1899. *Ussa michaelinus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 4, pt. 3, 135.

*Type locality*.—San Miguel de Murcia, Tarlac, Luzon.

## USSA MICRODONTUS Heude.

1888. *Ussa microdontus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 34.

*Type locality*.—Batangas, Luzon.

## USSA NUBLANUS Heude.

1888. *Ussa nublanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 24.

*Type locality*.—La Laguna, Luzon.

## USSA RAMOSIANUS Heude.

1888. *Ussa ramosianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 26.

*Type locality*.—Nueva Ecija, Luzon.

## USSA ROSARIANUS Heude.

1888. *Ussa rosarianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 30.

*Type locality*.—Nueva Ecija, Luzon.

## USSA ROXASIANUS Heude.

1888. *Ussa roxasianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 33.

*Type locality*.—Batangas, Luzon.

## USSA RUBIGINOSUS Heude.

1888. *Ussa rubiginosus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 38.

*Type locality*.—Bataan and Nueva Ecija, Luzon.

## SIKELAPHUS SOLOENSIS Heude.

1894. *Sikelaphus soloensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 3, 147.<sup>o</sup>

*Type locality*.—Sulu.

## USSA SPATHARIUS Heude.

1888. *Ussa spatharius* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 25.

*Type locality*.—La Laguna, Luzon.

## USSA TELESFORIANUS Heude.

1888. *Ussa telesforianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 36.

*Type locality*.—Batangas (?), Luzon.

## USSA TUASONINUS Heude.

1888. *Ussa tuasoninus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 25.

*Type locality*.—Batangas, Luzon.

## USSA VERZOSANUS Heude.

1888. *Ussa verzosanus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, pt. 1, 37.

*Type locality*.—Nueva Ecija, Luzon [Heude, l. c. (1899), 4, pt. 3, 134].

## USSA VIDALINUS Heude.

1899. *Ussa vidalinus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 4, pt. 3, 136.

*Type locality*.—San Miguel de Murcia, Tarlac, Luzon.

## USSA VILLEMERIANUS Heude.

1899. *Ussa villemmerianus* HEUDE, Mem. Hist. Nat. Emp. Chinois, 4, pt. 3, 136.

*Type locality*.—San Miguel de Murcia, Tarlac, Luzon.

<sup>o</sup> Heude here gives an earlier reference for this name in "Catal. des Cerfs tachetés, 1885"; but this has not been seen by me.

## Family BOVIDÆ.

## Genus BUBALUS Smith.

1827. *Bubalus* H. SMITH, Griffith's Cuvier, 5, 371. *Type*.—*Bos bubalus* SMITH=*Bos bubalis* LINNÆUS.

Large buffaloes (carabao and tamarao); both sexes with hollow horns.

*Bubalus bubalis* (Linnæus).

1758. *Bos bubalis* LINNÆUS, Syst. nat., 10 ed., 1, 72.

1894. *Bubalus kerabau ferus* NEHRING, Sitz.-Ber. Ges. Nat. Freunde Berlin, No. 8, 187, October 16. (Luzon.)

*Type locality*.—Rome, Italy (introduced from southern Asia). Luzon (Worcester); Masbate (Worcester); Mindoro (Worcester); Negros (Worcester).

*Bubalus mainitensis* Heude.

1888. *Bubalus mainitensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 205.

*Type locality*.—Lake Mainit, Mindanao (domesticated). Mindanao (Heude).

*Bubalus mindorensis* Heude.

1888. *Bubalus mindorensis* HEUDE, Mem. Hist. Nat. Emp. Chinois, 2, 50, August.

1888. *Anoa mindorensis* STEERE, in SCLATER, Nature, 38, 364, August, 16.

1888. *Probubalus mindorensis* STEERE, Proc. Zool. Soc. London, 415, November 20.

*Type locality*.—Mindoro. Mindoro (Heude).

*Bubalus moellendorffi* Nehring.

1894. *Bubalus moellendorffi* NEHRING, Sitz.-Ber. Ges. Nat. Freunde zu Berlin, No. 8, 185, October 16.

*Type locality*.—Busuanga Island, Calamianes. Busuanga (Nehring); Culion (Trouessart).

## Order SIRENIA.

## Family DUGONGIDÆ.

## Genus DUGONG Lacépède.

1799. *Dugong* LACÉPÈDE, Tabl. Mamm., 17. *Type*.—*Dugong indicus*=*Trichechus dugon* MÜLLER.

Large marine mammals (adults about 2.5 meters long); no posterior limbs; no nails on fore limbs; tail flattened and horizontally expanded.

Dugong dugon Müller.

1776. *Trichecus dugon* MÜLLER, Natursyst., Suppl. und Reg., 21.

*Type locality*.—Cape of Good Hope to Philippine Islands, and further east toward the south pole and Straits of Magellan. Mindanao (Elera).

SPECIES ERRONEOUSLY CREDITED TO THE PHILIPPINE ISLANDS  
BY ELERA.

In his Catálogo Sistemático de Toda la Fauna de Filipinas, Casto de Elera records from definite islands many species of mammals which simply do not and never have occurred there. These records are probably based on misidentified specimens, as nearly all are listed as represented in the collection of the Colegio-Universidad de Santo Tomás de Manila. Some of them obviously represent species since described from the Philippines, which he had confounded with Indian or Chinese forms and are thus accounted for in the present list. The records which I have ignored as quite impossible, or too improbable for serious consideration without better evidence, are listed below. Doubtless a few of these species, or their local representatives, especially certain of the bats, will eventually prove to inhabit the Islands.

CHIROPTERA.

Phyllorhina larvata	(Hipposideros)	Luzon.
Vesperugo noctula	(Nyctalus)	Luzon.
Vesperugo maurus	(Pipistrellus)	Luzon.
Vesperugo abramus	(Pipistrellus)	Luzon.
Vesperugo tylopus	(Glischropus)	Palawan.
Vespertilio chinensis	(Myotis)	Luzon.
Vespertilio capaccini	(Myotis)	Luzon.
Vespertilio muricola	(Myotis)	Sulu.

CARNIVORA.

Viverra zibetha Negros; Palawan; Panay.  
Viverricula malacensis Cagayan; Luzon.

RODENTIA.

Pteromys petaurista, Pt. philippensis, and Pt. innornatus (Petaurista) Palawan.  
Funambulus vittatus (Sciurus) Samar.  
Bandicota gigantea (Nesokia) Luzon.

PRIMATES.

Semnopithecus albipes	(Presbytis)	Sulu.
Macacus speciosus	(Pithecus)	Sulu.
Macacus nemestrinus	(Pithecus)	Luzon.



## TYPE-LOCALITIES OF MAMMALS IN THE PHILIPPINE ISLANDS.

- Balabac. Squirrel; *Sciurus steerii*.  
 Pig; *Sus barbatus balabacensis*.  
 Mouse-deer; *Tragulus nigricans*.
- Basilan. Flying-squirrel; *Sciuropterus crinitus*.  
 Deer; *Rusa steerii*.
- ISABELA. Pygmy Squirrel; *Nannosciurus concinnus*.  
 Deer; *Melanaxis basilanensis*=*Rusa* (?).
- Bohol.  
 SEVILLA. Tarsier; *Tarsius fraterculus*.
- Bongao. Palm civet; *Paradoxurus torvus*.  
 Slow Lemur; *Nycticebus menagensis* (Bongao and Tawi-Tawi).
- Busuanga. Buffalo; *Bubalus moellendorffi*.
- Cagayan Sulu. Fruit-bat; *Pteropus cagayanus*.  
 Monkey; *Pithecus cagayanus*.
- Calamianes. Badger-skunk; *Mydaus schadenbergii*.  
 Mongoose; *Mungos parvus*.  
 Pig; *Sus calamianensis*.  
 Deer; *Hyelaphus calamianensis*=*Rusa* (?).
- Cebu. Pig; *Sus cebifrons* (Masbate or Cebu).  
 Deer; *Ussa cinerus*, and *U. crassicornis*=*Rusa*.
- Culion. Tree-shrew; *Tupaia möllendorffi*.  
 Squirrels; *Sciurus albicaudus* and *S. möllendorffi*.  
 Deer; *Rusa culionensis*.
- Cuyo. Tree-shrew; *Tupaia cuyonis*.
- Guimaras. Bat; *Rhinolophus hirsutus*.
- Leyte. Fruit-bat; *Pteropus aurinuchalis*=*Acerodon jubatus*.  
 Tarsier; *Tarsius philippensis* (Mindanao, Leyte, and Samar).
- Luzon. Shrew; *Pachyura luzoniensis*.  
 Bats; *Pteropus chinensis*=*Pt. leucopterus*, *Rhinolophus anderseni* (?), *Rh. philippinensis*, and *Rh. arcuatus*.  
 Palm civet; *Paradoxurus philippinensis*.  
 Rats, etc.; *Phloeomys cumingi* and *Ph. pallidus*.  
 Monkey; *Macaca fur*=*Pithecus syrichta*, and *Pithecus syrichta*.  
 Pig; *Sus philippensis*.  
 Deer; *Rusa philippinus*, *Ussa atheneensis*, and *U. gonzalvus*=*Rusa*.
- BAGUIO, BENGUET. Rat; *Epimys calcis*.
- BATAAN PROVINCE. Deer; *Ussa elorzanus* and *U. rubiginosa*=*Rusa*.
- BATANGAS. Deer; *Ussa baryceros*, *U. brachyceros*, *U. chrysotrichos*, *U. gorrichanus*, *U. guidoteanus*, *U. hipolitianus*, *U. microdontus*, *U. roxasianus*, *U. telesforianus*, and *U. tuasoninus*=*Rusa*.
- CAMP JOHN HAY, BENGUET. Rat; *Apomys musculus*.

## Luzon—Continued.

DARAGA, ALBAY. Bat; *Ptenochirus jagorii*.

HAIGHTS-IN-THE-OAKS, BENGUET. Rats; *Epimys querceti*, *Tryphomys adustus*, *Batomys dentatus*, and *Apomys major*.

HIGHLANDS OF NORTHERN LUZON. Rats, etc.; *Celænomys silaceus*, *Chrotomys whiteheadi*, *Rhynchomys soricoides*, *Epimys luzonicus*, *Batomys granti*, *Carpomys melanurus*, and *C. phæurus*.

ISABELA. Bat; *Kerivoula whiteheadi*.  
Rats, etc.; *Crunomys fallax*.

JALA JALA. Pigs; *Sus microtis* and *S. frenatus*.  
Deer; *Ussa dailliardianus* and *U. marisianus*=*Rusa*.

LA LAGUNA. Pig; *Sus marchei*.  
Deer; *Ussa baryceros*, *U. chrysotrichos*, *U. hipolitianus*, *U. marzaninus*, *U. nublanus*, and *U. spatharius*=*Rusa*.

LA LAGUNA and TARLAC. Pig; *Sus minutus*.

MANILA. Flying lemur; *Galeopithecus philippinensis*=*Cynocephalus volans*.

Bats; *Eleutherura philippinensis*=*Rousettus amplexicaudatus*, *Pteropus pyrrhocephalus*=*Acerodon jubatus*, *Acerodon jubatus*, *Vespertilio alecto*=*Emballonura monticola*, *Rhinolophus rufus*, and *Rh. subrufus*.

Monkeys; *Macacus philippinensis*=*Pithecus syrichta* and *Macacus palpebrosus*=*P. syrichta*.  
Pig; *Sus arietinus* (?).

MARIQUINA. Deer; *Ussa guevaranus*=*Rusa*.

MARIVELES. Deer; *Ussa corteanus*=*Rusa*.

MOUNT DATA. Rats, etc.; *Epimys datae* and *Crateromys schadenbergi*.

NUEVA ECIJA. Deer; *Ussa ambrosianus*, *U. garcianus*, *U. macarianus*, *U. marzaninus*, *U. ramosianus*, *U. rosarianus*, *U. rubiginosus*, and *U. verzosanus*=*Rusa*.

PAMPANGA. Flying lemur; *Cynocephalus volans*.

PARACALI. Bats; *Emballonura discolor*=*E. monticola*, *Rhinolophus rufus*=*R. subrufus*, *Hipposideros antricola*, and *H. obscurus*.

SAN MIGUEL DE MURCIA, TARLAC. Deer; *Ussa michaelinus*, *U. vidalinus*, and *U. villemerianus*=*Rusa*.

SOUTH CAMARINES. Bat; *Rhinolophus virgo*.

S. MATHEO CAVE. Bat; *Hipposideros diadema griseus*.

VOLCANO YRIGA, CAMARINES. Bat; *Cynopterus luzoniensis*.

- Malanipa.** Fruit bat; *Pteropus speciosus*.
- Masbate.** Pig; *Sus cebifrons* (Masbate or Cebu).  
Deer; *Melanaxis breviceps* and *M. masbatensis*=*Rusa* (?).
- Mindanao.** Fruit bat; *Acerodon jubatus mindanensis*.  
Squirrels; *Sciurus mindanensis* and *S. philippensis*.  
Slow lemur; *Nycticebus philippinus*=*N. menagensis*.  
Tarsier; *Tarsius philippensis* (Mindanao, Leyte, and Samar).  
Pigs; *Sus incostans*.
- ALAYA.** Pig; *Sus mindanensis*.
- DAVAO.** Palm civet; *Paradoxurus minax*.  
Squirrel; *Sciurus cagsi*=*S. mindanensis*.  
Rats and mice; *Epimys kelleri* and *Mus commissarius*.  
Tarsier; *Tarsius carbonarius*.
- GRAND MALINDANG MOUNTAIN.** Shrew; *Crocidura grandis*.
- LAKE MAINIT.** Buffalo; *Bubalus mainitensis*.  
Bat; *Hipposideros coronatus*.
- MATI.** Deer; *Ussa francianus*=*Rusa*.
- MERCEDES.** Bat; *Taphozous pluto*.
- MOUNT APO.** Woodshrew; *Podogymnura truei*.  
Tree shrew; *Urogale cylindrura*.  
Bat; *Rhinolophus inops*.  
Rats, etc.; *Crunomys fallax*, *Epimys albigularis*, *E. mindanensis*, *E. todayensis*, *E. vulcani*, *E. v. apicis*,  
*Bullimus bagobus*, *Limnomys sibuanus*, *Tarsomys apoensis*, *Apomys hylocætes*, *A. insignis*, and *A. petræus*.  
Monkey; *Pithecus mindanensis apoensis*.
- MOUNT BLISS.** Shrew; *Crocidura beatus*.  
Rat; *Apomys bardus*.
- PANTAR.** Fruit bat; *Pteropus vampyrus lanensis*.  
Rat; *Epimys pantarensis*.  
Monkey; *Pithecus mindanensis*.
- TAGULAYA.** Rat; *Epimys tagulayensis*.
- ZAMBOANGA.** Tree shrew; *Urogale everetti*.  
Bat; *Rhinolophus arcuatus exiguus*.  
Rats; *Epimys magnirostris* and *E. zamboangæ*.
- Mindoro.** Bat; *Harpyionycteris whiteheadi*.  
Deer; *Ussa barandanus*=*Rusa*.  
Buffalo; *Bubalus mindorensis*.
- ALAG RIVER.** Bat; *Chilophylla hirsuta*.  
Rat; *Epimys gala*.
- MOUNT DULANGAN.** Rat; *Epimys mindorensis*.
- MOUNT HALCON.** Shrews; *Crocidura halconus* and *C. mindorus*.

Negros. Rat; *Epimys negrinus*.

Palawan. Tree shrew; *Tupa ferruginea palawanensis*.  
Badger-skunk; *Mydaus marchei*.  
Squirrel; *Sciurus juvenicus*.  
Pig; *Sus ahoenobarbus*.

IWAHIG. Bear-cat; *Arctictis whitei*.  
Mongoose; *Mungos palawanus*.  
Rat; *Epimys luteiventris*.

PUERTO PRINCESA. Flying squirrel; *Sciuropterus nigripes*.  
Porcupine; *Thecurus pumilus*.  
Pig; *Sus barbatus palavensis*.

Palmas. Fruit bat; *Pteropus pumilus*.

Panay. CONCEPCION. Fruit bat; *Acerodon lucifer*.

Philippine Islands. Shrews; *Crocidura grayi*.  
Bats; *Cynopterus philippensis*=*C. luzoniensis*, *C. cumingi*=*C. luzoniensis*, *Pteropus leucopterus*, *Taphozous philippinensis*, *Megaderma philippinensis*=*M. spasma*, *Hipposideros pygmaeus*, *Vespertilio rufopictus*=*Myotis formosus*, *Myotis macrotarsus*, *Vespertilio meyeri*=*Pipistrellus irretitus*, *Vespertilio eschscholtzii*=*Miniopterus schreibersi*, *Miniopterus tristis*, and *Kerivoula pellucida*.  
Rats and mice; *Epimys everetti* and *Mus castaneus*.  
Monkey; *Macacus cynomolgus cumingi*=*Pithecus syrichta*.  
Deer; *Rusa alfredi*, *Rusa nigricans*, *Melanaxis* (?), *elegans*, and *Ussa longicuspis*=*Rusa*.

Samar. Bats; *Kerivoula jagorii*.  
Squirrels; *Nannosciurus samaricus* and *Sciurus samariensis*.  
Tarsier; *Tarsius philippensis* (Mindanao, Leyte, and Samar).

Sulu. Shrew; *Pachyura edwardsiana*.  
Gibbon; *Hylobates funereus*.  
Deer; *Sikelaphus soloensis*=*Rusa*.

CRATER LAKE MOUNTAIN. Monkey; *Pithecus suluensis*.

Tawi Tawi. Slow lemur; *Nycticebus menagensis* (Tawi Tawi and Bongao).

Ticao. Rat; *Epimys tyrannus*.

#### NOTE TO SPORTSMEN AND TRAVELERS ON THE PRESERVATION OF SPECIMENS.

The average traveler little realizes what he may do for zoology. It is in the power of sportsmen, especially, to enrich museum collections, at little trouble to themselves, with the many valuable specimens which come into their hands, and for which they have no personal use. The skins and skulls of all animals killed should be carefully preserved and deposited, with full data,

in some institution of standing; it will surprise the average sportsman to find how gladly they are received and what scientific interest is attached to material he assumes to be worthless.

The making of study skins of small mammals is really a very simple process and one of considerable interest; and the pleasures to be realized from trapping add greatly to a traveler's experiences. A small pamphlet issued by the United States National Museum gives instructions for preparing specimens of mammals in the most approved styles for scientific study. To the sportsman, the greatest interest naturally lies in the medium sized and larger mammals, the skins of which, when intended chiefly for study, are easily prepared. A primary incision should be made from the breast to the tip of the tail, and other incisions from the sole of each foot up the leg to the main longitudinal cut. In horned mammals, an additional cut from the base of the head to between the horns, branching in a Y to around each horn is necessary; the skull in these being removed through this opening. The skin is then removed entire, special care being taken to skin out the feet, tail, ears, and lips. The skin should then be well salted, the salt rubbed in on the most fleshy parts and around the edges. It is a good plan to separate the skin of the ear from the cartilage and force salt to the tip, salting the feet well also. The skin may then be rolled up for a few hours, as over night, and afterward spread out *in the shade* to drain and dry. As the drying process advances, the skin may be folded, before too dry, into a convenient bundle for transportation. The skull, which should always accompany the skin, may be disjointed from the vertebræ, care being taken not to cut or otherwise injure its base. The flesh should be roughly cut off, the brain removed through the natural opening at back of skull with a folded and bent wire, and the skull dried in the sun or near a fire. The skin and skull of the same individual should always be tagged with the same number so that there will be no uncertainty as to what skull belongs with a particular skin when the specimens reach the museum.

Even when it is not possible to save the skin, or when it is desired for other purposes, the skull of a medium sized or large mammal should always be saved. Large series of skulls from all localities are greatly desired for study and comparison. Where the sportsman wishes to retain the horns they may be sawed off, either alone or with a portion of the bone of the frontal region, and the specimen will still be of great service to the specialist, to whom the teeth and lower surface of the skull are more important than the horns. When this is done a pho-



tograph of the skull before the horns are removed should be taken, to accompany the specimen. Weathered skulls, particularly when the full set of teeth is present, are often of great value when their exact locality is known.

Specimens should be labeled with the exact locality where the animal was killed, the date, sex, and the collector's name. The length of the animal before skinning, from nose to root of tail, the length of the tail vertebræ, and length of hind foot are valuable measurements and should be taken if the time and conveniences are available.

Bats are always important and may be preserved entire in spirits, or in a weak solution of formalin; a small incision in the belly will allow the fluid to enter the cavity and aid in preservation. Alcohol and formalin must not be used at their full strength. Add to commercial alcohol (95 per cent) one-fifth its volume of water. Add to commercial formalin 15 times its volume of water.

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